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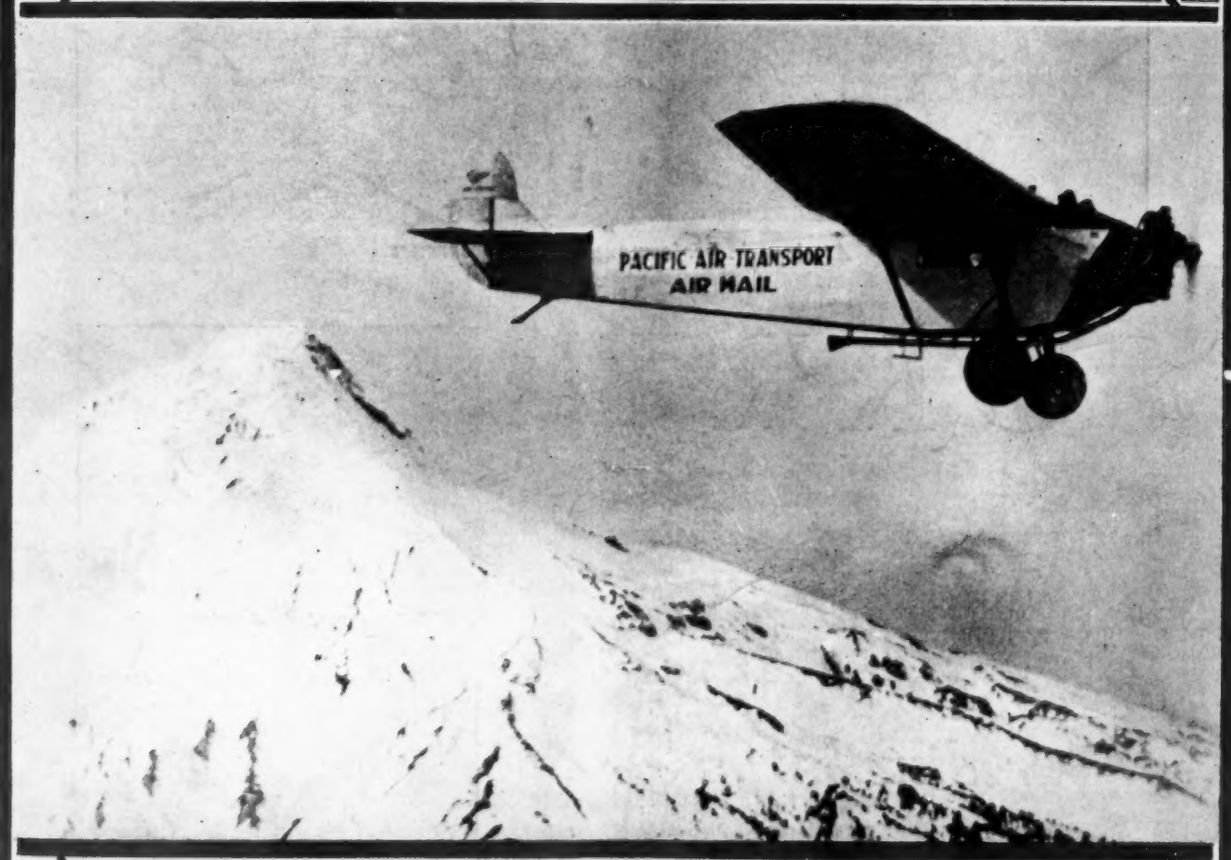
The Oldest American Aeronautical Magazine

JULY 4, 1927 Issued Weekly PRICE 15 CENTS



Fokker Universal of the Pacific Air Transport flying past Mount Hood

VOLUME XXIII

NUMBER 1

SPECIAL FEATURES

MEETING SERVICE NEEDS
RECONNOITERING OVER NICARAGUA
RADIO BEACON TO GUIDE HAWAIIAN FLIERS

AVIATION PUBLISHING CORPORATION
Editorial and Business Offices
250 WEST 57 STREET, NEW YORK
Publication Office
HIGHLAND, N. Y.
Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office, at Highland, N. Y. under Act of March 3, 1879

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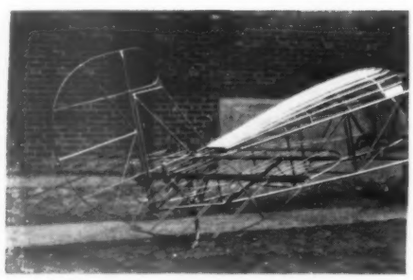

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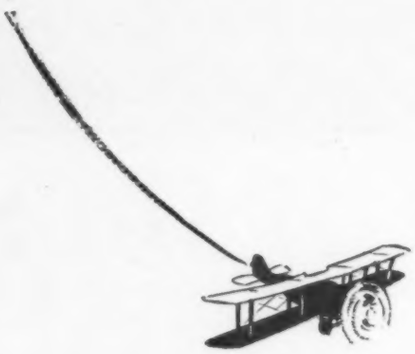


THE growth of the Boeing Airplane Company is one of those astounding developments with which America is startling the world. A factory personnel, chosen for achievement and ability **** factory buildings originally designed for future expansion, rather than for past needs **** competent aeronautical engineers creating new designs **** these, and many other factors have surely played their part in the earned reputation behind every Boeing plane.

Boeing Airplane Co.
Seattle, Washington

Mail by Air and Speed it There

A Correction

Through a regrettable error in the Boeing Airplane advertisement in the June 6th issue of this magazine, the following statement appeared:

> "That this keen vision is appreciated is borne out by the fact that in *the first four months* of 1927 the Boeing Airplane Company has produced a thousand various type planes"

The Advertisement Should Have Read:

> "That this keen vision is appreciated is borne out by the fact that since our business was established in 1916, we have produced a thousand various type planes."

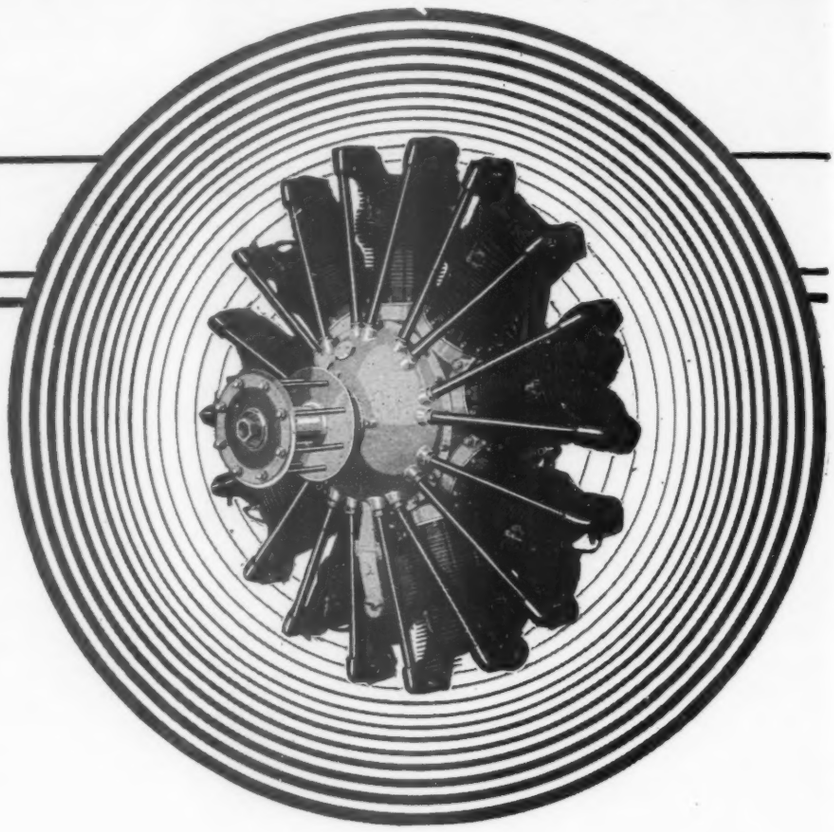
Botsford-Constantine Co.

Advertising

Seattle Portland San Francisco

MAIL BY AIR AND SPEED IT THERE

Wasp & Hornet
LEADERSHIP



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425 H.P.
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at 1900 R.P.M.
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THE
PRATT & WHITNEY AIRCRAFT CO.
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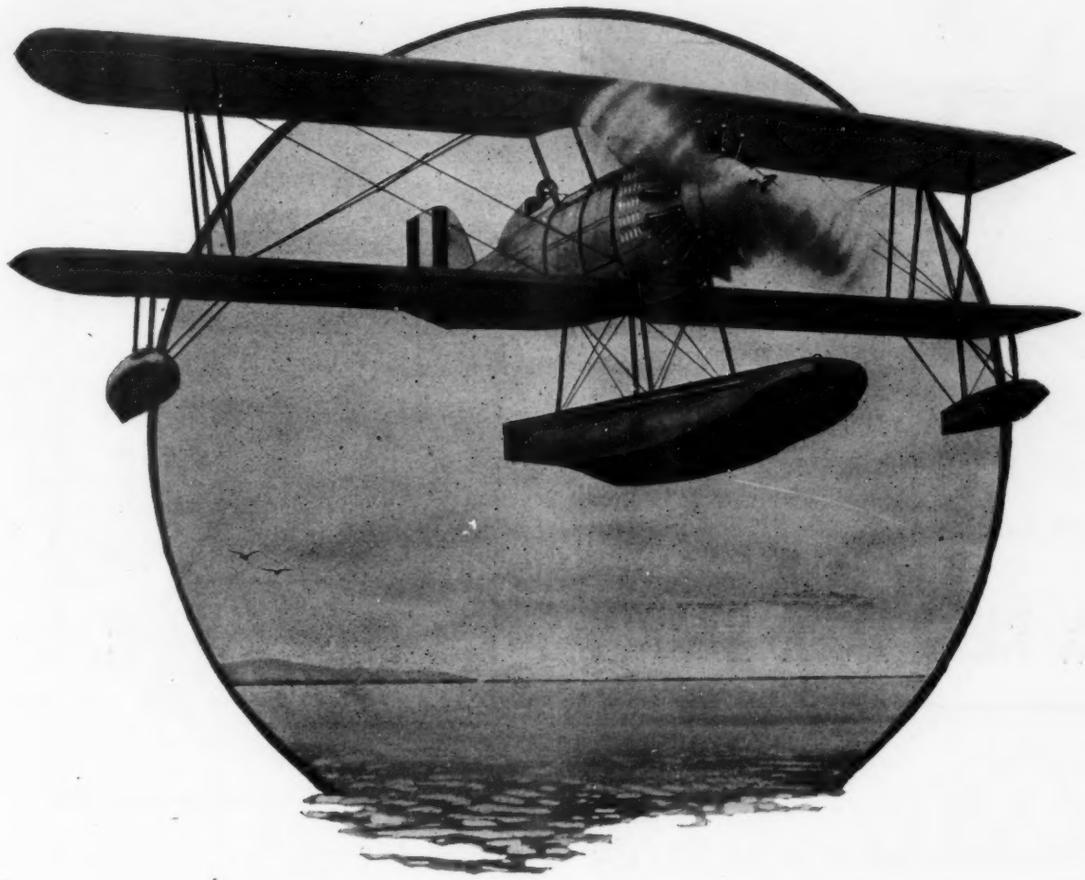
DEPENDABLE ENGINES



CLIMB

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LONG ISLAND CITY, NEW YORK

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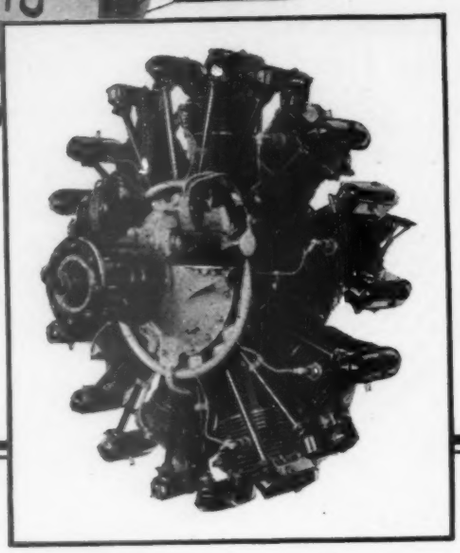
WORLD'S ENDURANCE RECORD

both held by Wright-Bellanca plane equipped with

BOHN RING TRUE BEARINGS



Once again the world is thrilled with a marvelous Trans-Atlantic flight — this time by Clarence Chamberlin and Charles A. Levine.

And again Bohn Ring True Bearings have played their part in achieving the final splendid result.

For the Spirit of St. Louis with which the indomitable Lindbergh made his flight was equipped with Bohn Ring True Connecting Rod Bearings.

And now the Wright-Bellanca plane, the holder of the world's record of 51 hours for sustained flight, and the one with which Chamberlin and Levine made their perilous crossing, in which a new world's non-stop long distance record was established, is equipped with Bohn Ring True Bearings.

We are proud indeed that Bohn Ring True Bearings should have had a part in three so magnificent and thrilling achievements.

WRIGHT AERONAUTICAL CORPORATION
Paterson, N. J.
U. S. A.

April 15, 1927.

Bohn Aluminum & Brass Corporation,
Detroit, Michigan.

Gentlemen:

Referring to your letter of April 10th, it seems an appropriate time to tell you that your bearings were used in the 2 planes that made the endurance tests at the Curtiss Field, Long Island flight last week. This plane has also been used for many sustained flights under the supervision of Mr. Bellanca.

Yours very truly,
WRIGHT AERONAUTICAL CORPORATION,
By
Purchasing Agent.

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Out of this research notable and far-reaching advances in the art of aeronautics are taking form.

THE GLENN L. MARTIN COMPANY

CLEVELAND, OHIO

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Cable Address:—AEROENG
Publication Office:—HIGHLAND, N. Y.

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Subscription price: Four dollars per year. Canada, five dollars. Foreign, six dollars. Single current copies, fifteen cents. Back numbers, 25 cents. Advertising rates on application.

Issued every Monday. Forms close ten days previously. Entered as second-class matter Nov. 22, 1920, at the Post Office at Highland, N. Y., under act of March 3, 1879.

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With the Editor

As these few lines are being written two American airmen are awaiting the favorable opportunity to take their planes off California ground in an attempt to pilot them to the Hawaiian Islands. If either, or both, of them reach their objective American men in American made airplanes will have "boxed the compass" with successful flights; north to the Pole, east to Europe, south to South America, and west to the Hawaiians.

Indeed a record of achievements of which we all should be proud. The American aeronautical world can justly boast of possessing such airmen as Lindbergh, Chamberlin, Byrd, Dargue, Maitland, Smith and a hundred others. Men who have staked their lives for the cause. Yet it is only of late that the man in the street has begun to realize the great importance and value of the airplane. For years airplanes have been making successful flights every day right here in our own country, but the man in the street has not noticed the activity of progress above his head. Strange as it may appear, it was not until the airman flew AWAY from his native land that his ground loving countryman began to sense the significance of this new means of travel.

Fairchild have created a new cabin monoplane. Quite the finest machine in its class. The pilot's seat has been placed into the cabin. Powered with the Wright 200 H. P. "Whirlwind", it is the most serviceable plane for the transport of passengers and express goods. Extreme stability and spontaneous response to the controls make the Fairchild Monoplane easy to handle and a pleasure to fly. The cabin provides seating accommodation for four passengers and the pilot. The total laden weight is 3225 lbs., of which 760 lbs. is available for passengers and freight. Maximum speed 124 miles per hour approximately. Wing span 44 ft., or 12 ft. when folded. Write us about your aerial problem, Fairchild facilities are at your disposal.

Fairchild Airplane Mfg. Corporation
Farmingdale, Long Island

DIVISION OF FAIRCHILD AVIATION CORPORATION

AVIATION

The Oldest American Aeronautical Magazine

VOL. XXIII JULY 4, 1927 No. 1

Sightseeing vs. Time Saving

WHENEVER THE possibilities of passenger air transportation are discussed, the chief advantage that is mentioned is the saving of time. Important as this feature is, there is another attraction for passengers that should not be overlooked. Sightseeing, to use the term generally employed to cover a more leisurely method of travel, has apparently been neglected in the plans for inducing passengers to use aircraft. When compared to the time actually saved by travel by air, the sightseeing lure should not be passed over as an unimportant factor.

In the European air lines practically all routes are laid out on the time saving basis, the shortest distance between cities being selected as the most advantageous route. As often happens, the air tourist misses views that he greatly wishes to see. Take for example, the air route from Cologne to Frankfort. This follows the direct line and the air tourist misses all the romantic and picturesque scenery of the Rhine. If a half hour's flying were added to this flight it would become famous as one of the great scenic air trips of the world. Another route that overlooks this point is the Paris-Strasbourg flight. No attempt is made by slight detours to give passengers a view of Reims, Chateau Thierry, St. Mihel and other places of the greatest historical importance. It may be said that if a half hour to an hour were added to every air trip in Europe, and the sightseeing feature emphasized, aerial travelers would be willing to pay the extra cost and thousands would be attracted who now visit the off-the-route places by motor bus.

While the United States does not afford so many objectives of historic or scenic interest, in planning future air lines, the advantages of the detour should be given serious consideration. Take the New York to Chicago route as an instance. If air passengers who were not pressed for time could be given an opportunity of flying up the beautiful Hudson as far as the Catskills and then over Niagara Falls, many might take the trip who otherwise would go by boat and train. From New York to Washington there are many spots associated with the Revolution that would give air lines a great opportunity to sell the scenic advantages of their service.

The saving of time, under present conditions, and in the absence of night passenger travel, is one of those questionable advantages of air travel, if it is granted that time between nine in the morning and five in the afternoon is the only period worth saving. With the sightseeing development many air lines could be operated which could have elastic schedules, and even make round trips, with little thought of saving time. The sightseeing industry in the country is growing every year and aircraft should secure a part of this traffic along with the development of the more prosaic air transportation.

Landing Fields

A HEALTHY sign of the times for aviation is the interest that the daily and periodical press is taking in the subject of landing fields. The educational work of the Aeronautic Branch of the Department of Commerce and the rousing of public interest in aviation that followed the recent trans-Atlantic flights with the American planes and American engines have strongly influenced the directing of thought to this important matter.

Such being the case it would seem highly advisable for all those interested in the aeronautical welfare of this country to redouble their efforts towards that end while public interest is at white heat. It might safely be said that the one great need of aviation within our gates is a greater number of landing fields throughout the country, and the sooner they are established the better it will be for commercial aviation. But at the same time the task must not be done haphazardly.

There can be no extensive development of commercial flying without proper ground facilities any more than there could be railway transportation without terminals, or water transportation without port facilities. Each of these forms of transport have their special requirements, and it happens that the outlay required for air terminals is small as compared with the cost of proper railroad or harbor facilities.

A heavy item in the requirements of air terminals is acreage. In smaller communities where large tracts of land, at reasonable cost, are obtainable close to the heart of the city, the problem is not a difficult one. It is the finding of suitable acreage close to the business center of most of our large cities, and at a cost not prohibitive, that creates a real problem. Fortunately, practically every large city has some water front, river or sea, and fortunately, also, the development of the amphibian plane makes possible the utilization of these natural landing facilities.

Some experts who have given thought to the perplexing subject of practical, close-in landing fields for larger cities are inclined to the view that the railroads have pointed a way to the solution of the problem, by the creation of great terminal stations short distances from cities, and then changing motive power for the transfer of the passengers to the terminals in the center of the cities. With the use of amphibians operating as ferries between large air terminals located at desirable points some distance out, and water terminals in the midst of the populous districts, passengers and freight could be moved in a very brief time, and the long land trips to and from distantly located aviation fields could be eliminated.

This is a plan to which students of air terminals are beginning to give thought, and it may prove the solution of the problem in such of our larger cities as present specially difficult conditions.

Reconnoitering Over Nicaragua

As Told to Andrew R. Boone in an Interview with Capt. H. Denny Campbell, U. S. Marine Corps and Winner of the Schiff Trophy for Safe Flying

IF YOU WOULD take a piece of paper, crumble it in your hand and throw it on the table, you would have a good relief map of Nicaragua. It is mostly ups and downs. My first impression of the little country was that of a topography liberally sprinkled with "spics" and volcanoes. Certainly the latter characterizes her air, for it is the bumpiest I have ever experienced.

When I went to Nicaragua several months ago with a squadron of marine fliers, I found the country very mountainous, flying conditions difficult since the motors run hot and both pilot and observer are quite uncomfortable while aloft. During the rainy season the ground becomes soft, and for that reason the landing fields become dangerous. Take it any way you like, Nicaragua offers no pleasure to an otherwise "safe" flier.

Bomb Rebel Troops

Yet, caught by the spirit of adventure, men go there and voluntarily risk their lives in the air. In this I do not refer to Marine Corps fliers, but to those hardy specimens—Major Lee Mason and Major Will Brooks—in the employ of the Federal government (the conservatives.) These former American Army pilots, with a fleet of three Swallows, make daily reconnaissance flights to locate both conservative and rebel troops, sometimes undertake bombing expeditions and always live on the defensive against those who have placed prices on their heads.

There planes are in poor condition, the wings are warped and their motors deliver relatively little power. All bear evidences of having been shot up, one carrying with it "wound stripes" in the form of several bullet holes. With this triumvirate Majors Mason and Brooks represent the federal army in the air.

One of their interesting undertakings is the bombing of rebel troops. The bombs they use are crude, consisting of a cylinder of iron containing three sticks of dynamite, a spring and a metal ball. On striking the ground, the ball is thrown against the dynamite and the bomb (theoretically) explodes. General Jose Solarzano Diaz, commanding general of the Nicaraguan army, toys with these bombs daily in an endeavor to perfect them. He generally manifests interest in aviation activities and spends nearly all his time around the field at Managua. Many times have I seen him monkeying with fuses from artillery shells and hammering on the noses of three-inch projectiles while every one else in the neighborhood evacuated. Yet he has not yet been injured from this source.

Planes Once Belonged to Cab Company

One day, with only a dozen or so bombs remaining and the battle of Terra Azul expected, General Diaz took a number of three-inch shells for experimentation. He intended to use them as aerial bombs. He dissected one and without precaution commenced to hammer on the nose. Major Ross Rowell and I, standing nearby, departed. Through a combination of fearlessness and ignorance of its potentialities, he continued until he had it broken into bits.

The flying done by Mason and Brooks is a great assistance to the commanding general. They destroy property, kill rebels and bring back much important information. They report to G.H.Q. the locations of both conservative and rebel troops in the hills and mountains, for communication other than by airplane is very slow. Field operations, in the absence of airplanes, are often not known to headquarters for some time, because the chief land communication is had by

Captain Campbell pointing to bullet holes made in his plane by rebel rifle and machine gun fire.

the two-wheeled cart, drawn by two, four or six bulls. Roads are nearly impassable. The journey from Managua to Madagalpa, a distance of 75 mi., requires two days by auto truck. In this trip, the drivers ford several streams, using roads that are hardly more than trails.

The planes in the service of the federal army once belonged to the Checker Cab company of San Francisco. Mason's ship still has the checker insignia. None of these planes carry machine guns and no bomb racks are available for handling these instruments of destruction. Dangerous though it may be, both fliers carry the bombs in their laps!

The routine of bombing sees the aviators climb into their planes, ready for the expedition. Helpers hand them the metal cylinders, which they lay in a row in their laps. Beyond that, there is little plan. They take off and fly direct to the enemy territory, locate groups of rebels, and throw the bombs overboard into their midst.

Occasionally the bomb routine varies. On one occasion, I saw the fliers construct a bomb in which were combined three elements of attack—bomb, gas and fire. They were contained in a five-gallon can, which, like the smaller ones, were carried in the lap and tossed overboard.

The effect of this was largely psychological, though it could do real damage. The regulation bomb was first prepared, and to it fastened the large can. Inside this container, the experimenter placed a double handful of black powder, a bottle of sulphuric acid and a quantity of gasoline-soaked waste. They proceeded on the theory that the dynamite would set off both the gasoline and powder and the sulphuric acid would furnish the gas. Certainly when the rebels saw this huge thing hurtling toward them through the air they took to their heels and suffered a relapse in morale for a day or two.

While Mason and Brooks patrol the airways, their force of twenty mechanics guard the field and work on the third

plane. These men offer little skill in motor mechanics, especially for airplane motors. Yet they keep the ships going, and enable them to take off from the little field with some degree of regularity.

Mason and Brooks wear the gold leaf of the American major. Their flying ability is generally respected by Nicaraguans. Mason, originally from Texas, has been in Nicaragua several months, finding employment first in making aerial maps and doing other jobs for an American lumber company there. In the United States they "barnstormed" together for some time, and were buddies in the army air service during the war. Brooks went to Nicaragua not long ago after Mason had been employed by the federal government, following the unexplained burning of his ship, and together they constitute the official air force.

Hostile Fire is Returned

Neither officer ventures away from the airdrome unless fully armed. They carry pistols while on their flights. Both are exceptionally good shots and practice daily with the commanding general, who, incidentally, is the best shot I have ever seen. The mechanics and officers around the field shoot every day and throughout the day. One mechanic nonchalantly took his rifle and fired at a cow, which walked onto the field. One hears firing throughout the day, and occasionally an American mechanic ducks when he hears a bullet whistle nearby, probably en route to some bird or bottle.

While the United States is neutral in the Nicaraguan difficulties, the marine fliers go aloft under orders to return any hostile fire. A neutral zone 2,000 yd. on each side of the railroad and for 2,000 yd. around towns on the railroad exists, and often marine fliers are seen above the strip, and on flights elsewhere.

There is a total of about 100 mi. of railroad in the entire country running from Managua down to the coast at Corinto, which has managed to run on a paying basis for the past

Major Lee Mason (sitting) and Major Bill Brooks

thirty years. The only other means of transportation being by bull carts and pack animals as the roads are almost impassable to automobiles.

There are two seasons in Nicaragua—wet and dry. It rains from May to November, the air being muggy and hot. From November to May there is no rain and the wind blows a hurricane all day long carrying a cloud of dust and from one end of the country to the other. It is extremely hot the year round—one six months of the year you have mud, the other six months, dust.

The volcanoes are very interesting, the whole country is undoubtedly undermined with volcanoes and volcanic forces, while there are very few recent eruptions. I saw many which looked as if they were ready to blow up at any minute. Momotombo, which rises majestically into the air 5000 ft. straight up from the shore of Lake Managua smokes and throws off steam continuously. It takes the shape of a cone and has no crater, while Santiago, only about twenty miles north of the capital, presents a crater hundreds of feet deep and smokes and throws off fumes which occasionally destroy the huge coffee plantations by killing the plants. Telica erupted last about 1915 throwing rocks and fire a distance of 25,000 ft. in the air. El Veejo, the oldest volcano in Nicaragua blew up years ago and scattered ashes and lava from New Orleans to South America.

Nicaragua belonged to Spain until about 1820 when it became free. It is a republic having a president, cabinet and congress and a constitution very much like our own. The country has its ups and downs politically as well as topographically which is the reason that the U. S. Navy and Marine Corps are now ashore there. To date the United States has always been ready to step in and help smaller and weaker governments to get on their feet.

The rebels are good fighters, being mostly volunteers who think they are fighting for a cause while many of the federal troops are recruited against their will, given a gun and sent out to join the army. Some stay, some throw away the gun and come back. The poorer and more ignorant class do most of the fighting, the white coated boys that parade the park at night are hardly aware that there is a war going on. Neither side makes any effort to care for their dead and wounded during or after an engagement. After the battle of Chundega there were about 500 dead left in the streets of the city. No effort was made to care for the wounded of either side, many of the wounded being killed by the rebels as they withdrew. The others left to die, and all of them were consumed by the buzzards in less than four days. During this battle the rebels entered the city, captured many rifles and machine guns, thousands of rounds of amunition, burned the town and withdrew.

United States Protects Railroad

About this time the United States stepped in and declared the railroad neutral territory and 200 yd. on all sides of any town or city on the railroad, or any town where U. S. Forces were stationed, as neutral territory. This relieved the situation somewhat and the scene of operations shifted to the hills in the vicinity of Muy Muy. According to the latest press reports, the federals now have the rebels on the run but General Moncado, the rebel commander-in-chief, is a very clever hombre and will probably take to the hills and prepare to come back and strike another blow where they least expect it. Then there is the aftermath of these "spic" wars. The side that is defeated usually breaks up into small bands of bandits, going about raiding and pillaging all the outlying districts and living off the other half of the country who actually won the war. Consequently there is more or less fighting in these countries all the time. The Marine Corps went into Nicaragua in 1912, put down a similar revolution, helped the government to get lined up on sounder basis and left a legation guard at Managua. About two years ago all the Marines were withdrawn from Nicaragua. The temptation for political aspirants and grafters to get in force and power again became so strong that another revolution broke out between the two parties and necessitated the presence of Marines again this year.

On March 25 while on a reconnaissance flight in the vicinity of Motagolpa, I went along as observer in the rear cockpit. As we were passing over a shock in the mountains, I saw a native run out and shoot at us. It struck me as more or

(*Continued on page* 28)

Radio Beacons to Guide Hawaiian Fliers

Maitland and Hagenberger Hope to Cross Pacific by Means of Directional Radio Waves Flashed From Two Army Stations at San Francisco and Paia

By ANDREW R. BOONE

NAVIGATION OF airplanes is expected to undergo a considerable revolution as the result of development of a radio beacon by which Lieuts. Lester J. Maitland and Albert Hagenberger plan to pilot their army three-engined (Wright Whirlwind) Fokker monoplane from San Francisco to one of the Hawaiian Islands.

Hagenberger made known the "radio navigation" plans at San Diego soon after his arrival at North Island to test the plane before proceeding on to San Francisco for the hop-off. The feat, which centers the world's attention on a new enterprise in trans-oceanic aerial navigation, sounds simple enough, yet for two years skilled engineers of the United States air corps engineering division and the signal corps aircraft laboratory at Dayton, Ohio, have devoted their time and skill to construction of the apparatus.

Signals Start Flashing at the Take Off

Maitland and Hagenberger hope to reach Hawaii across 2418 miles of the Pacific by means of directional radio waves flashed from two army radio stations at San Francisco and Paia on the island of Maui. The fliers will check their path of flight by astronomical observations, but from the War Department point of view the radio beacon test becomes the undertaking of primary interest. This beacon is believed ready for its first important practical test, success of which will mean as much to the future air navigator as did the old lighthouse to the mariner.

There are two 90-foot masts at San Francisco and Paia. From these, two triangular loop aerials are suspended. Each loop extends out 120 ft. at the base of the mast and is movable, to procure directional radiation. One can rotate these loops easily with the hand.

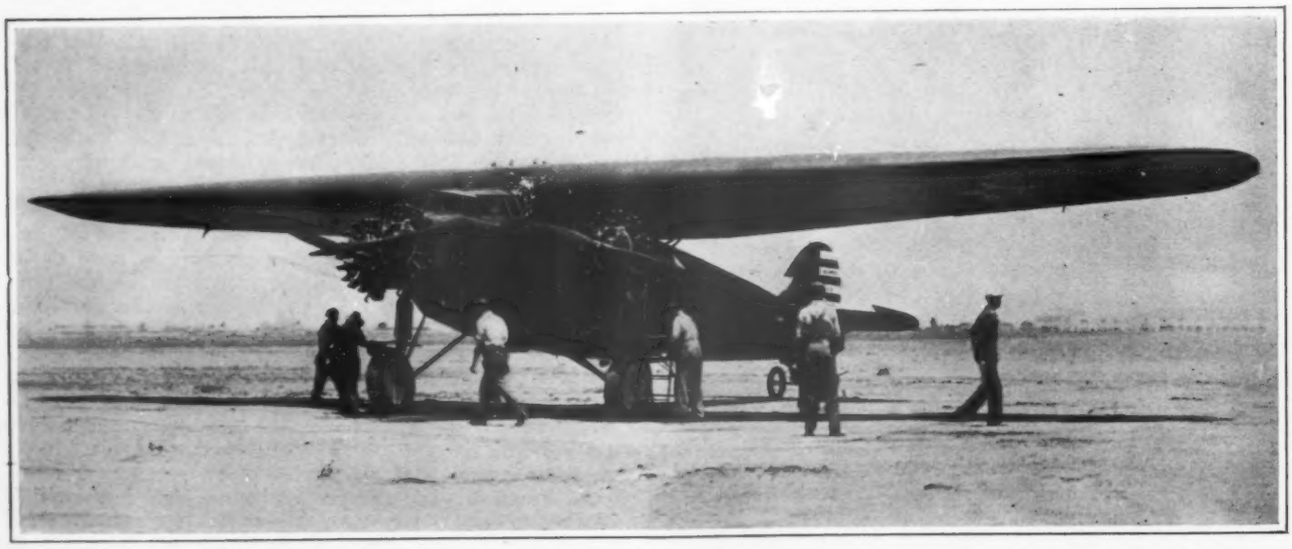
As soon as Maitland and Hagenberger take off from some field near San Francisco both the San Francisco and Maui beacons will begin flashing signals, which will follow a course similar to a beam from a large searchlight. If the plane veers to the left of the correct line of flight the signals in this zone will die out or become unintelligible. Should the monoplane swing northward from the course the signal will change from the center zone signal to a new signal which will warn Lieut. Hagenberger to correct his path of flight. An automatic sending device at both stations will insure constant and accurate signals. "In a new instrument like this," said Lieut. Maitland recently, "many things may go wrong. I believe from past experience, however, that it will work. We will fly down our radio path as accurately as possible."

Both Maitland and Hagenberger were selected by Army officials to make the Hawaiian flight because of their skill and familiarity with Hawaiian conditions. Each has served a total of five years in the islands and are familiar with the topography there. Because of conditions not far from the California shore which will demand expert flying ability, they plan to take off at seven o'clock in the morning. Between 250 and 500 miles out is a cross-wind zone, where they will experience their greatest probable drift. By leaving early in the morning the fliers will reach a point at noon where the sun's azimuth will be at right angles to the correct flight course. Thus Lieut. Hagenberger can determine by instruments his position and course at that time.

Will Head Straight for Maui

The navigator will take astronomical observations every two hours and drift observations every half hour in the strong wind zone. When the plane reaches the western edge of the strong-wind zone it will be about noon. At that point Hagenberger can tell by a quick glance at his charts (pre-computed by Bradley Jones, navigation engineer) how far north or south the plane has drifted should the radio have proved unsatisfactory. Jones accompanied the Fokker to San Diego to complete his work on the Hawaiian charts.

In flying across the Pacific, according to Hagenberger, the Fokker will head directly for Maui, the approximate center



The three engined (Wright Whirlwind) Fokker monoplane in which Lieutenants Maitland and Hagenberger plan to fly from California to the Hawaiian Islands

of the group of islands, which are about 400 in extent. The islands cover an area of about 70 degrees, which permits a maximum navigational area of about 3½ per cent. The fliers know conditions there well enough to expect no good visibility. Because of the uprush of warm, damp air, it condenses at higher altitudes to form a thick haze, which virtually blankets the islands. The greatest navigational danger lies in the fact that there is an 80-mile channel be-

Lieutenant Hagenberger "shooting the sun," and Lieutenant Maitland

tween Kauai and Oahu, over which the fliers might pass without sighting land. Yet the presence of the radio set seems to forbid the probability of this danger.

The fliers will utilize other instruments than the radio to be absolutely safe. Hagenberger plans to make five shots in as many minutes at the sun, stars and planets at various times. After passing through the cross-wind zone the Fokker probably will fly on with a tail wind which will facilitate their computations. It is planned to take observations about every two hours, and drift observations in the cross-wind zone every thirty minutes. Radio communication other than signals from the beacon will be brief.

Tips & Smith Inc. Announce Dealer Plan

In announcing the new model Z-2 Super Rhone now in production in the Houston, Texas, shops, Tips & Smith, Inc., manufacturers of this static radial air-cooled engine, also announce a change in its selling policy whereby the exclusive sales right heretofore held by the Super Rohne Engine & Flying Corporation, are canceled except for the South Texas territory.

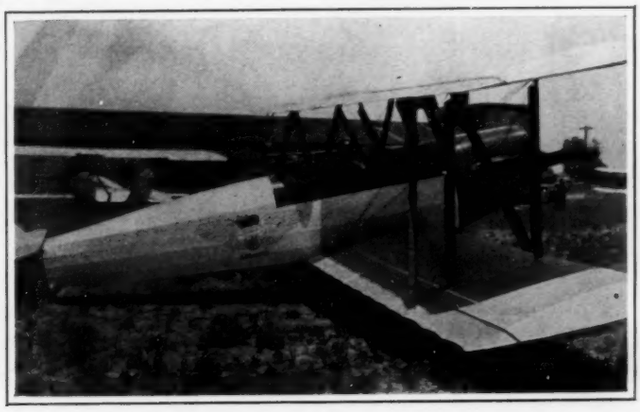
A system of dealerships with restricted territory is being formulated, and only bona-fide operating companies or individuals are being supplied engines in a given territory, at a reduced price to compensate for demonstration, instruction and advertising costs. These dealerships are now being established and a list of same will be available shortly. In this manner it is hoped that purchasers and operators of Super Rhone engines can be better cared for in the matter of service and repair, as well as being afforded more prompt deliveries than has been possible in the past.

The present production of Super Rhone model Z-2 engines contemplates a schedule of 100 engines for the current season, and orders are now being booked against this production. Throughout the last season every engine was sold before it came off the test stand, and in many instances urgent deliveries could not be effected under two to three weeks. It is hoped that the new distributing arrangement will make it so that any purchaser can get an engine when he wants or needs it.

The new model engine is a development from the cotton dusting experiences gained during the last season. Changes have been made which vastly increaes the life of the engine, and which make for smoother and more satisfactory performance for the average operator who has had no air-cooled engine experience. Major among the changes was the installation of a Zenith carburetor, which eliminated the double lever control previously necessary. The original bronzed-faced steel thrust junction running on two annular bearings on the crankshaft throw has been replaced by a thrust junction of duralumin which is properly forged and heat-treated and aged before machining. This change reduced the weight of the engine by eleven pounds and assisted materially in the dissemination of internal heat, especially when employed in connection with the new rich cobaltchrome exhaust valves that have been adopted for use instead of the original valves. Other changes of a minor nature, each deemed an improvement over the original models, complete the list.

Air-Kings for Becker Flying Service Inc.

The Becker Flying Service, Inc., has just contracted for a number of new Air-Kings, Model 27, which will be used at its flying field at Buffalo. The company will act as Air-King dealer for the western portion of New York. Planes



E. J. Becker (front seat) G. C. Plummer (rear seat) of the Air-King of the Becker Flying Service, Inc.

will be used for passenger, student and general commercial purposes. The Becker Flying Service expects to make passenger flights from its field over Buffalo and Niagara Falls. Mr. Becker expects to make up a carload shipment and have the other planes come to him via freight.

Packard Builds Largest Airplane Engine

The largest airplane engine ever built is now at the plant of the Kirkham Products Co. of Garden City, L. I., N. Y. It has twenty-four cylinders developing 1200 hp. at 2700 r.p.m. and was built by the Packard Motor Co., of Detroit. It is stated that the engine was designed for the Navy by Col. J. G. Vincent and Capt. L. M. Woolson. The engine is of the X-type, weighing 1402 lb. with a bore of 5⅜ in. and a stroke of 5 in.

The engine is to be used in a racing plane now being built at the Kirkham plant for Lieut. Al Williams. Very little information on the plane is available at this time, as both the plane and engine are experimental. The fuselage and wings are of spruce, as are the ailerons, rudder, and elevator. Williams hopes to make tremendous speed with the plane.

The Boeing Mail Plane

Designed to Carry Both Mail and Passengers and is Powered by a Pratt & Whitney Wasp 400 Hp. Engine

THE BOEING Mail Plane is designed for operation on an airline where it is desired to carry both mail (express) and passengers in one plane. It is powered with the Pratt and Whitney "Wasp" radial air-cooled engine.

There are two compartments for mail: one just aft of the engine section, and the other just forward of the pilot. The front compartment has a capacity of 25 cu. ft., the rear one of 36 cu. ft. The passenger compartment with the seat removed, has a capacity of 34 cu. ft., in case it is desired for use as additional cargo space. Both mail compartments are metal lined and are provided with hinged metal covers secured by large straps. The passenger cabin has a fixed metal ceiling.

The passenger compartment provides space for two passengers. There is a door in each side, the doors being provided with sliding safety glass windows. The cabin is furnished with comfortable leather cushions. Provision is made for forced ventilation and heating of the passenger compartment.

Side view of the Boeing mail plane

The gasoline supply of 100 gal. is carried in two tanks: one of 60 gal. capacity on the body just aft of the front mail compartment, and one of 40 gal. in the upper wing. In the event of the failure of the engine pump, the gasoline feeds by gravity from the wing tank, and the pilot is provided with a hand pump with which he can pump from the main tank to the wing tank.

The engine is equipped with an electric inertia starter. This starter is operated from the pilot's cockpit. An engine driven generator and storage battery (the latter located just behind the firewall in the front mail compartment) provide the electric current for starting and lighting. Complete night flying equipment is provided, including a dome light in the passenger compartment. A pressure fire extinguisher, covering both engine and gas tank compartments, is controlled by the pilot. Hand fire extinguishers are provided in the passenger's cabin and the pilot's cockpit.

This airplane is constructed to meet the factors of safety required by the U. S. Department of Commerce.

The wings are of the simplest wood and wire construction, the spars being of solid spruce, routed for lightness wherever possible. The external bracing is streamline duralumin struts and streamline wire. The wings are covered with fabric.

The body is of steel tubing with welded joints, with steel tie rods for diagonal bracing.

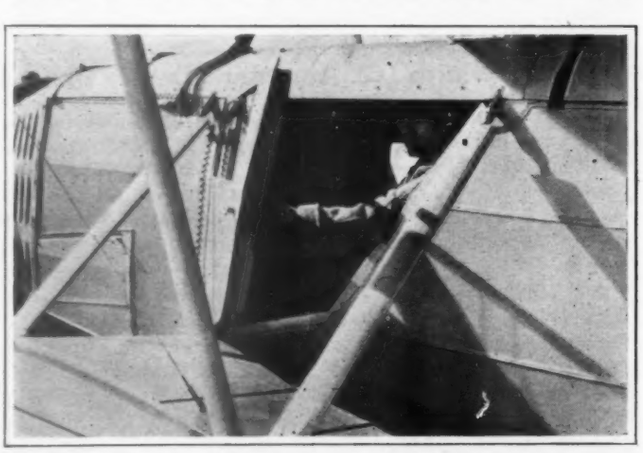
The rudder, fin and elevator are of steel tubing with welded joints. The stabilizer is of simple wood construction. All are fabric covered. The stabilizer, braced with streamline steel struts and streamline wire, is adjustable in the air from the pilot's cockpit. The fin may be adjusted on the ground. The split axle type of landing gear is of streamline steel tubing. The shock absorbing device is the well-known Boeing oleo unit. The 36 by 8 wheels are provided with brakes, mechanically controlled by hand from the pilot's cockpit. The brakes may be controlled individually (for steering on the ground) or together for braking in a straight run. The tail skid swivels and can be made steerable. The shock absorber is the familiar rubber cord.

This airplane is a sturdy, reliable and efficient carrier for operation on commercial airlines.

The general characteristics of the airplane are as follows:

Weight, with 100 gal. gas and 1600 lb. payload	5600 lb.
Wing area	545 sq. ft.
Span	44 ft. 2¼ in.
Length (overall)	33 ft. 3-3/16 in.
Height	11 ft. 7½ in.
Chord of wings	79 in.
Engine, Pratt & Whitney "Wasp" 410 h.p. at	1900 r.p.m.
Propeller "Standard Steel" Forged duralumin Blades adjustable on ground. Dia.	10 ft.
Wing loading	10.3 lb./sq. ft.
Power loading	13.7 lb./h.p.
Normal Payload per h.p.	3.9 lb./h.p.
Performance:	
High speed at ground	135 m.p.h.
Stalling speed at ground with full load	54 m.p.h.
Rate of climb at ground	770 ft./ min.
Climb to 10,000 ft. in	19.5 min.
Service Ceiling	15,000 ft.

The Boeing Air Transport, Inc., has been awarded the contract of the San Francisco to Chicago division of the transcontinental service, starting July 1, 1927, and continuing for a period of four years. The operating schedule will be the same as now maintained by the Post Office Department, leaving San Francisco at 7 a.m. with stops at Sacramento, Reno, Eko, Salt Lake City, Rock Springs, Cheyenne, North Platte, Omaha, Des Moines, Iowa City, arriving Chicago 5:45 p.m. the following morning. Westbound leaving Chicago



View of two passenger cabin of the Boeing mail plane

7:50 p.m. arrive at San Francisco 4:30 p.m. the next day, making a total of approximately twenty hours elapsed time.

The twenty-five airplanes to be used have been designed and manufactured by the Boeing Airplane Company particularly for this route. The airplanes will have a capacity of 1200 pounds of mail, in addition to two passengers. The

Unloading cargo from front compartment of the Boeing mail plane.

passengers will ride in an inclosed cabin. The airplanes are powered with a Pratt and Whitney "Wasp" radial air-cooled engine, developing 425 h.p.

The officers of the company are: W. E. Boeing, president, P. G. Johnson, Executive vice-president, Edward Hubbard, vice-president, in charge of operations, O. W. Tupper, secretary and C. L. Egtvedt, treasurer. The personnel, under the management of Mr. Hubbard, who will be assisted by D. B. Colyer, former General Superintendent of the Air Mail Service, will consist of pilots and mechanics who are now in the employ of the Post Office Department of this particular route.

Nothing is being overlooked by the Boeing Air Transport to insure a consistent operation on this important route. The airplanes themselves will represent an investment of over half a million dollars. Every effort has been made to procure the best obtainable in ground equipment as well as flying equipment.

Valspar on Ryan, Bellanca, Fokker Planes

An interesting fact in connection with the Lindbergh and Chamberlin trans-Atlantic flights is the manner in which their planes were protected from the elements. Outside of aviation circles, it is not ordinarily realized how important a part the finish plays in the flyng efficiency of a plane. If the fabric is not thoroughly protected from the effects of rain, sun, sleet and snow, it soon loses its tautness and the plane's safety is endangered. Advice from the Ryan Airlines, Inc., is to the effect that all metal parts of Lindbergh's plane are coated with Nitro-Valspar, while all wood parts of the plane have been treated with clear Valspar varnish. In the case of the Bellanca plane which Chamberlin flew from New York to Berlin, all exterior surfaces are Valsparred. The fuselage of this machine was coated with aluminum Valspar-Enamel while the doped wing surfaces and propeller were given coats of clear Valspar varnish. The Fokker tri-motor plane of Commander Byrd's also has its aluminum-colored fuselage coated with Valspar while its wing surfaces, which are made from plywood, are protected by clear Valspar.

A review of aircraft statistics shows that Valspar has been used on nearly all record-breaking American aircraft since the earliest days of aviation, and today is very widely used for aircraft work, where absolute dependability is a prime requisite. Of course, a finish of exceptional durability is essential in aircraft work, in order to stand the rigors of weather, temperature changes and vibration.

Chamberlin's Bellanca plane, when seen in its hangar shortly before its recent record flight to Germany, had already flown some 25,000 miles including the record endurance flight of over 51 hours made in April of this year—and was in perfect condition.

Official Weight Figures of the Ryan NY-P

The following are the official weight characteristics when the Ryan NY-P left New York and the number of man hours required in its construction, as submitted to AVIATION by Donald A. Hall, Chief Engineer, Ryan Airlines, Inc.:

Empty complete with tanks and instruments .... 2150 lbs.

Useful Load

Pilot	170 "
Miscellaneous	40 "
Gasoline — 450 Gallons (California @ 6.12 lb./gal.)	2750 "
Oil — 20 gallons @ 7 lb./gal.	140 "
	3100 "

Gross Weight

Fully loaded (25 gal. gasoline over design load) 5250 lb.

Net Empty Weight

Empty weight of 2150 lb. includes all tanks and special equipment and instruments.

Assuming a gas capacity of 60 gallons and oil of 5 gal. sufficient for ordinary flying, the weight of excess tanks and special equipment and instruments equals 450 lb.

Net empty weight=2150-450=1700 lb.

Total Useful Load

Total useful load=5250-1700=3550 lb.

Ratio of Weights

Ratio of useful load to gross weight=.68

Gross weight=3.1 times net empty weight.

Loading Fully Loaded

Wing loading=16.5 lb. per sq. ft.

Power loading=23.6 lb. per B.H.P. (223 B.H.P. at 1800 R.P.M.)

Airplane structure designed to suitable load factors at full design load.

Construction

3000 man hours to build not including superintendent's and manager's time.

Engineering

775 hours by designer, including performance calculations and flight testing.

75 hours put in by men in other departments. (man hours)

850 man hours total engineering time between February 26 and May 10 when NY-P left San Diego for St. Louis.

Total Man Hours 3850

Pacific Flight Prizes Now Total $85,000

Fliers who compete in the air races over the Pacific must fly to Honolulu and return to collect from the $50,000 fund being raised in San Francisco by public subscription.

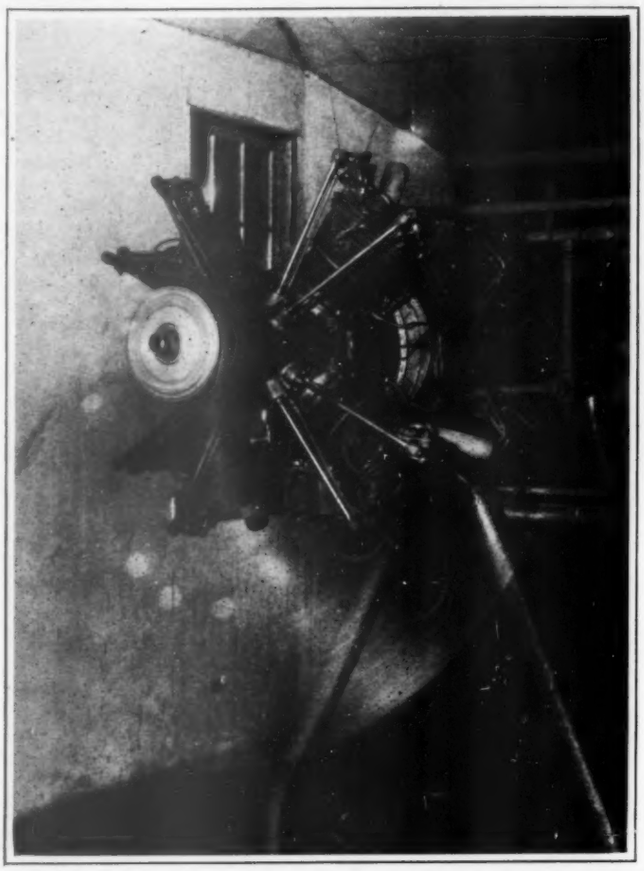
Announcement of the rules made recently by Frank A. Flynn, secretary of the Citizens' Committee, revealed that the first to make the round trip will receive $25,000. The second and third fliers making the round trip will receive $10,000 and $5,000 respectively, while $5,000 will go to the aviator making the best time on the flight and $5,000 to the flier who reaches Honolulu and on returning lands within a fifty-mile radius of San Francisco.

The pledging of $50,000 in San Francisco brings the amount of prize money for mainland to Hawaii flights to $85,000, James Dole, the Hawaiian pineapple grower, having offered $25,000 to the first flier to Honolulu and $10,000 to the second.

Cam Engine Passes Fifty Hour Test

Fairchild Caminez Engine Corp. Development Announced as an Approved Type by the Department of Commerce and is Placed in Production

THE CAM type aircraft engine, which has been developed by the Fairchild Caminez Engine Corp. during the past two years, is now being placed in production by its manufacturers. Experimental engines have been subjected to extensive tests with very satisfactory results. The first of the production type engines was recently subjected to a fifty-hour test, which it successfully completed in less than fifty-two hours of elapsed time. This test was conducted at the Farmingdale factory in the engine laboratory of the Company on June 15 to 17. During the test the engine was operated at about the cruising speed, averaging more than 100 hp. at 900 r.p.m. of the propeller. The Fairchild Caminez cam design permits operation of the engine with the same piston speed as the conventional crank engine, while the propeller is rotating at one-half of the usual speed. Hence, this speed of 900 r.p.m. is equivalent to 1800 r.p.m. for crank type of engine. This important feature makes it possible to use a large and slow speed propeller instead of the usual high speed type, although without the use of propeller reduction gears and, while still maintaining high power output for unit piston displacement. Such a feature becomes of considerable interest to aircraft designers, as it results in greater overall efficiency of the power plant. It is of particular advantage in providing high thrust just when this is most necessary, during take-off and climb.

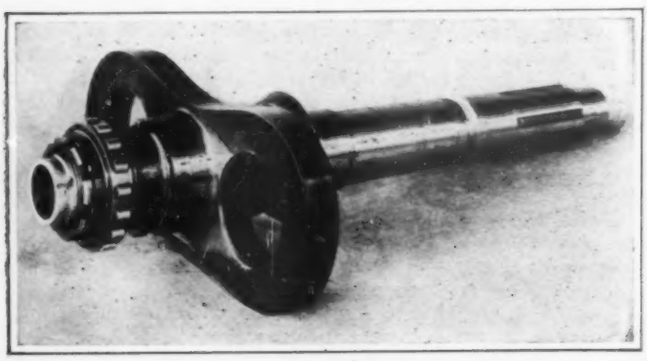


Flashlight photo of the Fairchild Caminez engine undergoing the fifty hour test run

No Adjustments Necessary

Throughout the entire fifty hours of operation the engine performed perfectly,—no adjustments being necessary. The two brief interruptions which occurred during the test were caused by troubles distinctly apart from the engine itself. One of the stops was necessitated by clogging of the gasoline strainers by excess of water which collected in the gasoline drums and found its way into the line.

Immediately following the test the engine was completely dismantled. All parts were carefully examined and found to be in perfect condition; full compression was indicated in all cylinders and no valve showed any signs of leakage when tested with gasoline. As all bearings in this engine are of the ball or roller type, rolling contact is obtained on all bearing surfaces and no sign of bearing wear could be detected after the test. The piston rollers and the cam (which in this engine takes the place of a crankshaft) were all carefully checked and no evidence of wear could be found by measurement.



The cam used in the fifty hour test run

In the test set-up (in order to simulate the condition of flight), an OX-5 engine was used to create an air blast on the cylinders of the cam engine. By this means, an air blast of about 60 m.p.h. was maintained and, although considerably lower, the slipstream velocity experienced in flight was entirely sufficient for cooling purposes. The engineers of the company announce their entire satisfaction with the manner in which the engine passed this test and production orders have been issued to the factory.

Designed to Army Requirements

The Model 447-B has been designed to meet the requirements of army training aircraft as well as those of commercial and air mail service. With its 447 cu. in. of piston displacement this engine develops 142 hp. at 1120 r.p.m.—or about .315 hp. per cu. in. of piston displacement. It is claimed that this is the highest power output (per unit of displacement) obtained to date with a non-supercharged air-cooled engine. The weight of the engine complete, with the exception of starter and propeller hub, is 340 lb. Its overall width and height is 37½ in. and its projected frontal area is only 3.9 sq. ft. The compactness, low weight, and small head resistance,—combined with the high power output at low propeller rotation,—result in fine airplane performance.

Due to the use of only four cylinders, the entire absence of valve-timing gears, and the elimination of counterweights, this engine possesses fewer and simpler component parts than customary aircraft engines The use of the drive-cam

mechanism results in high power output per unit of piston displacement and allows a compact arrangement of parts resulting in light weight per horse-power while employing sturdy detail construction.

The log sheets of the test have been submitted to the U. S. Department of Commerce and were approved in accordance with the regulations of that Department, the engine being announced as an approved type. It is stated it is the first engine to be submitted and officially approved since the inauguration of the Department of Commerce aircraft regulations.

The Fairchild Caminez Engine Corp. claims that the salient features of the engine result in full economy, efficient propeller operating speeds, low cost, simplicity of maintenance, and adequate durability, making it a most economical and reliable power plant.

European Air Routes Expand

About 30,000 miles of commercial air routes will be operated by European companies in 1927.

Additional air lines are reported for France, Sweden, Poland, Italy, Germany, Spain and Switzerland. The French have extended two lines across the Mediterranean to the north coast of Africa, and a Spanish line between Madrid and Seville via Lisbon has just been reported.

Most of the additional services in Germany are local, but plans are underway for additional international lines. A notable additional line connecting five countries is that between Vienna and Malmo via Prague, Dresden, Berlin, Lubeck and Copenhagen.

Airplane transportation companies in Europe are said to be providing better lighting and communication services and improved facilities at airports for the protection and comfort of passengers.

New aircraft have been added in many instances and these have additional devices for increasing the safety and reliability of the machines.

European governments subsidize their air services from one-half to nine-tenths or more of the operating costs. They also provide terminal facilities, lighting, weather reports, loans for the purchase of new equipment, freedom from taxes and many other indirect aids.

The operating companies are reported to be reducing operating costs, increasing efficiency and business, and generally improving their financial conditions.

The Royal Air Service Company (Holland) has an excellent record of safety and regularity with its three-engined craft and has reduced its deficits. Its operating cost per ton mile was reduced from $1.84 in 1920 to 54 cents in 1926 and its manager has indicated that the service can be self-supporting even after expected further reductions to 24 cents per ton mile.

The movement toward cooperative effort between companies of different nationalities is progressing steadily.

Example of Cooperation

A notable example of cooperation is the case of two Swiss companies who arranged with the German Lufthansa Co. to exchange passengers between their several lines, the Swiss line operating over Swiss territory and from Basel to Frankfort, the German company operating between other centers and Swiss cities near the northeastern quarter.

The Swiss companies exchange passengers with the Imperial Airways, Ltd., which serves between London, Paris, Basel, and Zurich and with the French Air Union which connects Geneva with Paris and Marseilles via Lyons.

The Basel Air Service Company, in connection with the Royal Aviation Company of Holland, has started a joint service between Basel and Amsterdam via Brussels and Rotterdam.

Plans are underway for a Swiss company to form a link in the service to be provided by several companies between German and Spanish cities and ultimately to be extended to South American countries.

The Vienna-Venice service is provided by the Austrian Air Service Company and the Transadriatica Company (Italian) whose planes alternate. The Vienna-Prague-Berlin-Malmo service mentioned above is provided by the united effort of Swedish, German, Czechoslovak and Austrian companies. The Paris-Berlin service via Cologne and Essen is operated jointly by the General Air Transport Company (French) and the Lufthansa Company (German).

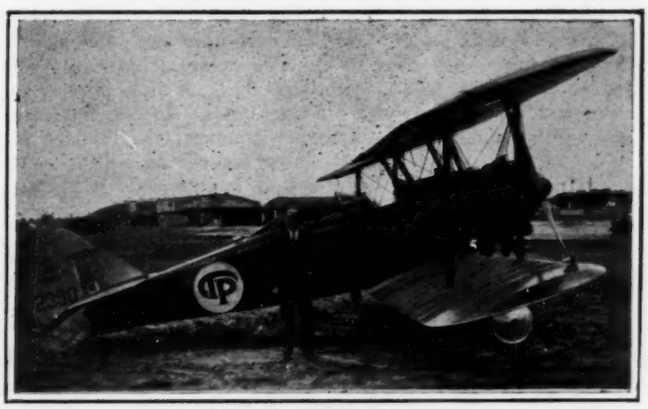
The Imperial Airways, Ltd., offers an excellent express and freight service, collecting and delivering packages in London and Paris and accepting the delivering at its airport terminals in several other cities. It quotes insurance and freight rates to many cities, several of which are not served by air but which receive shipments via railroad or steamship lines.

Postal authorities in several countries are providing additional arrangements for the exchange of mail and parcel post over the several air lines. Rates are quoted for parcel post packages from Marseilles, for instance, to several important centers in northern Europe.

Insurance rates are placed as low as possible and in many instances are lower than those offered by other means of transportation. The favorable rates quoted on shipments by air as compared with those by railroad and steamship are said to be made possible by the greater security of air shipments. One large company makes a practice of insuring its passengers without additional cost.

Company Owned Plane for Contact Work

Regular use of company-owned airplanes for closer contact between the Detroit and Cleveland plants and with customers in many cities was inaugurated recently by Thompson Products, Inc., automobile and airplane parts manufacturers, according to E. G. Thompson, vice-president. Mr. Thompson, sponsor of the plan, purchased the first company machine, a three-passenger Laird biplane, in Chicago and



E. G. Thompson, vice-president of the Thompson Products, Inc. and the Laird plane that he pilots

flew it back to the Cleveland plant in two hours and thirty-five minutes. Other machines will be added as required and hangar space has been arranged for the planes at the Cleveland municipal air field.

A manager of the company's air travel activities, working under Mr. Thompson's supervision, will be picked shortly from among several pilots with successful air mail and commercial flying records. Mr. Thompson, whose company is among the first to regularly maintain airplanes for industrial use, predicts that during the next few years automotive manufacturing concerns will lead others in adopting airplanes as a more efficient means of transportation, both for emergency shipments of parts and for cutting down on the travel time of executives and sales representatives.

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Meeting Service Needs

Forming of Test Units Might Tend to Shorten the Gap Existing Between Those That Design and Build Aircraft and Those That Operate Them

By LIEUT. COMDR. F. W. WEAD, USN.

SEVERAL PLANS have been suggested to shorten the gap which invariably exists between those that design and build aircraft, and those that operate them. It is certain that specifications and blueprints, no matter how detailed and accurate, will rarely result in an airplane in which every detail of performance, installation, equipment, servicing, and upkeep finds absolute favor in the eyes of pilots, observers and mechanics. A half an inch added to a gasoline filling spout, or a change in its location, may cut the refueling time in half; a half inch added to a windshield may increase the percentage of hits of a fighting pilot, or his comfort during combat, considerably; and a slight change in a small part may make a life long friend of an otherwise hostile engineer officer. *And* it is infinitely preferable that such matters be built into the airplane at the factory, than that they be crudely installed in an operating unit.

Formation of Test Unit Suggested

Commander Weyerbacher recently suggested in the U. S. Naval Institute that a test unit be formed at the Naval Aircraft Factory, wherein each new plane should be tested, altered to meet the criticisms of the test pilot, retested, and so on until no further changes are deemed necessary. In such a test unit it is vital that a pilot be available who has *recently* completed active service in each type of service squadron. Naval Aviation has developed so rapidly in the past few years that a pilot who may be the last word in any particular type of work today will be quite out of touch with material and methods a year from today. For this reason it is also essential that, after the test unit has done everything in its power to bring the particular airplane to perfection, it be sent to an active squadron for test, final criticism, and comparison with existing types. In the test unit and in the squadron complete performance trials should be run, and in the squadron the airplane should be flown in *every* phase of service for which it is intended. Criticism should not fail to extend down to the smallest nut, cotter pin, or other minor detail. The test unit mentioned above serves to personally and directly connect airplane designers and experienced pilots, and, if located anywhere but at the Naval Aircraft Factory, this advantage seems to be lost. Squadron tests give the airplane the latest, up to the minute criticism from those who are going to operate them, and are equally important.

Duplication of Test

If desired, tests may be duplicated as a check in a second squadron of the same type, but this should rarely be necessary. In the past, with all fighting plane squadrons on the Pacific Coast and with continuous scouting and torpedo plane development on the Atlantic Coast, this method offered more difficulties than it does today, with both coasts fairly well balanced in types. The tendency, when testing two experimental planes of the same type, to send one to one unit and the second to another must, however, be carefully guarded against. Side by side comparison in the air will definitely determine which of such a pair is superior, and do so more rapidly and accurately than all the cold trial figures which have ever been written.

Assuming that the tests have been completed, and a production contract let, the first completed airplane on that contract should be sent to an operating squadron of the type for which the airplane is destined for final acceptance trials, or pilots from such a squadron should be sent to the factory to conduct them. When the airplane first goes to a squadron for test, and from there directly into production, it is no longer the plaything of the test unit, and final trials conducted elsewhere than in an operating squadron—no matter how capable and experienced the pilot may be—will not obtain satisfactory results.

Selection of Type Standards

Some time ago it was suggested, by Commander Wilson, I believe, that one airplane—the best—of each type be selected as standard, and that production be limited to those airplanes so selected until concurrent experimental work produced a new airplane definitely superior to the one under production. This plan has many obvious advantages, and can readily be fitted into the test unit and squadron test procedure outlined herein. Any steps which will do away with costly and troublesome changes in aircraft during production and which will insure consideration of every pertinent detail before production is started are certainly in the right direction. It is also frequently complained that aircraft furnished on a production contract do not meet the performance attained in trials. It is natural that operating aircraft will consistently fall below new trial aircraft in performance as they gain age and weight, and almost invariably some items are found necessary in service which are not considered so during trials. The once proposed plan of having each factory specialize in a certain type of airplane seems to be more or less caring for itself; while possibly of some advantage to the industry and to the service, it might easily be carried to that point where competition, without which rapid development and progress are rarely attained, would be stifled.

Planes Flown Instead of Shipped

There will doubtless be some objection to the time required for the procedure proposed herein. It is evident that the results obtained will more than compensate for any delay, and, if planes are flown from point to point instead of shipped, and proper test facilities and standard routine established in this regard, the time required should not be excessive.

It is equally important that a factory representative, preferably the chief designer, be present at all trials and tests, and that he visit operating units from time to time. More information can be gained from a few days spent in close contact with gunnery, tactics, and other daily squadron operations than can be obtained in weeks of study of records and reports. Aviation personnel are of necessity vitally interested in their material, and invariably welcome an opportunity to explain exactly what they want. Gun installation troubles, construction or material defects, landing gears, arresting gears, and, in general, aircraft, engines, their accessories, and methods form the bread of their daily conversation. When comparative trials are being held between two planes similar in type, however, it is not always practicable to open frank discussions with factory representatives, in order that any tinge of favoritism and unpleasant arguments may be avoided.

It appears that service needs can best be met through a proper system for testing new types, in which operating units provide the final, detailed criticism, and by closer contact between aircraft designers and active squadrons.

Coordination Tests Successful

In the annual War Department efficiency tests of the searchlights and sound locators of Battery "A", 63rd Coast Artillery (Anti-aircraft) recently conducted near Palo Alto, Calif., the battery scored a remarkable record of 100 per cent hits.

The purpose of the exercise was to test the efficiency of sound locators and searchlights in discovering and illuminating bombing planes passing over a defended area. There resulted much accurate information of value to both the Air Corps and the Anti-aircraft Artillery.

An observation plane from Crissy Field carried out the simulated attack by bombing planes on an objective located near Los Altos. The battery organized a defensive zone over which the plane was to pass, in an area south of Standard University, and by means of sound locators and searchlights, discovered and illuminated the plane as it flew over.

The plane, without running lights, made four simulated attacks on each of two nights at intervals of from 10 to 20 min. Under the conditions of the problem, on each passage through the defended area, the plane simulated dropping of a bomb by firing a white rocket at the time and under conditions the bomb would have been released in a real attack.

The defensive zone was about 2½ mi. wide and the plane was free to fly within the limits of the zone at any desired altitude above 2,000 ft., and to maneuver under service bombing conditions as desired by the pilot. The average altitude for the four flights on the first night was 8,500 ft. and on the second night 8,000 ft.

So efficient were the listening devices and searchlights that on every passage of the plane it was discovered and illuminated for approximately two minutes before the bomb release signal was fired. Under service conditions the plane would have been sufficiently illuminated to permit effective fire from anti-aircraft guns and machine guns before it could have reached its objective.

The consistency of detection is shown by the fact that during the last four nights of preliminary training and the two nights of record tests, the plane made thirty-four attempts to pass unnoticed over the defended area but was discovered and illuminated on every passage except one.

Pertaining to the Front Cover Picture

To the Editor of AVIATION:

I am taking the liberty of sending you a picture of our new six-passenger Fokker cabin plane, recently taken on a flight around Mt. Hood, which, as you are undoubtedly aware, is one of the principal and most picturesque mountains on the Pacific Coast and is located about sixty miles east of Portland, Oregon.

This picture was taken by Piper and Heaton of the Oregon Screen Review, Lieut. Oakley G. Kelley, Commanding Officer of Pearson Field (the Army reserve field at Vancouver, Wash.) acting as pilot of the camera plane. The Fokker was piloted by Vernon Bookwalter, one of our regular pilots, and at the time of this shot was flying at an altitude of a little over 13,000 feet. In addition to the pilot, it was carrying four passengers and considerable camera equipment.

This is the second cabin plane to be purchased by the Pacific Air Transport for service on their regular air mail, passenger and express route between Los Angeles and Seattle, the first being a six-passenger Travel Air monoplane, now being flown on regular service between Los Angeles and San Francisco.

The Fokker plane has not yet been placed in regular service but it is expected that within a few days it will be placed on the regular run between San Francisco and Seattle, running northbound on Tuesdays, Thursdays and Saturdays, and southbound on Wednesdays, Fridays and Sundays.

The purchase of these cabin planes was the result of a desire on the part of the Pacific Air Transport to provide more comfortable and luxurious facilities for its rapidly increasing passenger business and heralds the beginning of a policy whereby this company will completely equip its line with this class of planes for the comfort and convenience of its patrons.

It is an established fact that there is no more beautiful route as viewed from the air than that between southern California and the Pacific Northwest. In fact, the broad sunlit valleys with their numerous orchards and vineyards between Los Angeles and San Francisco, the Tehachape Mountains, the broad expanse of the Sacremento Valley, north of San Francisco, and the snow-capped peaks of the Sierra, Cascade and Siskiyou Ranges, as seen from the air, are wonders never to be forgotten.

On the route of the Pacific Air Transport between Medford and Portland the passengers may view as never before miles and miles of primitive forests, numerous beautiful streams which are never seen from the highway or train, the wonderful Williamette Valley in Oregon with its numerous well-kept farms and orchards, and at practically all times five famous mountain peaks are so close in view that it would almost seem that he could reach out and touch them—these are Mount Shasta in California, Mount McLaughlin, and the Three Sisters, Mount Jefferson, Mount Hood in Oregon, and Mount St. Helens in Washington. As the plane nears Portland, it is possible in addition to the last three mountains named to also see mount Adams and Mount Rainier in Washington.

Going north from Portland the route follows the famous Columbia River as far as Kelso, Washington, then turns due north, following along the west slopes of Mount St. Helens and Mount Rainier until Tacoma is reached, thence follows the shore line of Puget Sound to Seattle.

Passenger travel along this route is becoming very popular, not only among local residents who use the service principally because of its time-saving feature, but also with tourists from eastern states wishing to see as much of our wonderful Pacific Coast as possible.

Noel B. Evans
Traffic Manager
Pacific Air Transport

The Sullivan Vaporizer

The Sullivan vaporizer, produced by the Sullivan Vaporizer Corp., of Long Island City, N. Y., can be applied to any internal combustion engine employing gasoline for fuel. It is claimed for this article that it cuts gasoline consumption by delivering absolutely dry gas to the cylinders and provides for maximum efficiency under all conditions. It is now in use on motor vehicles, but its application to motor boats and aircraft is expected shortly.

The qualities claimed for this vaporizer are that it provides complete combustion, makes it absolutely impossible for the engine to knock, increases speed, provides greater and more uniform power and eliminates crankcase dilution. This is also said to eliminate carbon and fouled spark plugs, because no unburned gasoline is left in the cylinders to form carbon.

The LZ-127 To Make World Flight

Dr. Hugo Eckener has announced that the Zeppelin LZ-127, now under construction, will cross the Atlantic Ocean between Germany and the United States several times next Summer, after which it will circumnavigate the globe. This will necessitate the erection of two anchor masts, one in Asiatic Russia, near the Pacific Coast, and the other in the Western United States or Canada, to be used in addition to the one at Lakehurst, N. J.

The Zeppelin Company will be allowed to have the airship for three months after its completion for test purposes. It is Dr. Eckener's plan to make the world flight in an easterly direction. After the World flight, the new airship will be placed in service between Spain and South America.

The Easterwood Dallas-Hong Kong Prize

$25,000 *Offered for First Flight Before Midnight September* 15, 1928

SO MANY requests have been received by AVIATION for the official terms of the prize offers made for various flights that every effort will be made to print them as soon as available. So that the exact wording will be available AVIATION will reprint the offers exactly as received.

ENTRANT CONTRACT
William E. Easterwood, Jr.
Dallas, Texas to Hongkong, China Flight

William E. Easterwood, Jr., of Dallas, Texas, offers a prize of $25,000.00 to be given to the first aviator making a successful flight from Dallas, Texas, U. S. A., to Hongkong, China, within a period of time not to exceed one hundred forty-four hours including time of stops. Two stops will be permitted, one at Honolulu, and one at either Guam or Manila. If a non-stop flight be made from Manila to Honolulu, or vice versa, an extra stop at San Francisco will be permitted. The flight must be made in an American made aeroplane equipped with an American made motor. The flight may be begun at any time after the 26th day of May, A. D. 1927, and completed before midnight of the 15th day of September, A. D. 1928, Dallas, Texas, time. The rules of the contest and the qualifications of the entrants are to be interpreted and enforced by a Flight Committee appointed by William E. Easterwood, Jr., and any communication or application should be directed to the Flight Committee of the Easterwood, Dallas, Texas, to Hongkong, China Flight, No. 519 South Akard Street, Dallas, Texas, U. S. A. The entry blanks, rules, and regulations governing said flight are set forth herein below:

ENTRY BLANK
EASTERWOOD, DALLAS, TEXAS, TO HONGKONG, CHINA, FLIGHT

Name .....
Address .....
Age (Must be at least 21 years of age or more) .....
Name and address of parents or nearest of kin .....
Make of Plane .....
Make of Motor .....
Date of Manufacture and by whom .....

Each entrant and contestant must be governed by and comply with the following rules and regulations:

Article 1. Each entrant agrees to undertake his flight as an independent undertaking and in no way shall the entrant or contestant be entitled to financial assistance or financial aid in making the flight or attempting to make the flight from the said William E. Easterwood, Jr., the Flight Committee or the Dallas Trust and Savings Bank. It is agreed that the contestant is in no way a representative of William E. Easterwood, Jr., the Flight Committee or the Dallas Trust and Savings Bank, and that said contestant enters said contest purely as an independent adventurer. There shall be no obligation on the part of William E. Easterwood, Jr., the Flight Committee or the Dallas Trust and Savings Bank to render aid or assistance to any contestant in attempting to make the flight.

Article 2. Each contestant, for himself, his heirs, assigns and administrators, waives the right of claim for damages as a result of personal injury whether the same results in death or not to himself as well as to third parties, and each contestant further waives the right of claim for damages resulting in injury to his property or to the property of anyone else in so far as William E. Easterwood, Jr., the Flight Committee or the Dallas Trust and Savings Bank may be concerned. Any person or persons accompanying a contestant shall do so at his own risk.

Article 3. Flight Committee: William E. Easterbrook, Jr., has appointed a Flight Committee of three persons whose names and addresses are as follows:

NAME
.....
.....
.....
ADDRESS
.....
.....
.....

In the event of the death, disability or refusal of any committeeman to act, the said William E. Easterwood, Jr., shall select a successor or successors, and a majority of said Committee shall control in determining questions and arriving at any decision. The Flight Committee shall be charged with the duty and given power to enforce all rules and regulations pertaining to said Flight and shall be the sole judge of the rights and duties of the contestants, subject to the rules as herein set forth. In case of doubt or disputed as to the meaning or interpretation, or in case of any question, doubt or dispute arising as to the right of any contestant or entrant, it shall be the duty of the Flight Committee to pass judgment in such case and render an opinion directing the course of conduct to be followed by such contestant or entrant, and any decision or ruling of the Flight Committee in such a case made shall be final and the rights of any contestant or entrant shall be determined by such a decision. The Flight Committee may at its discretion call upon the National Aeronautical Association in starting and timing the flight as to the time of departure and as to the time of the finish of the flight, but the Flight Committee shall be the final judge of any question pertaining to the time of flight and the completion of same.

Article 4. Each contestant must be at least 21 years of age and must have had at least two hundred hours of solo flying experience; and in addition, each entrant and contestant must be acceptable to the Flight Committee, and said Committee may for a good cause refuse to receive an applicant and there shall be no recourse from the refusal of the Flight Committee to accept anyone as an applicant or contestant.

Article 5. Each contestant shall give William E. Easterwood, Jr., reasonable notice of the time of his intended flight and take off, and such contestant must be checked out by the Flight Committee.

Article 6. The flight must be made in an American made aeroplane equipped with an American made motor. It will be permissable to change motors at the designated stops but it will not be permissable to change planes; however, repairs to the plane or planes will be permitted.

Article 7. Each contestant must have printed in large visible lettering subject to the approval of William E. Easterwood, Jr., upon the fuselage of said plane, the following words and letters: "EASTERWOOD, DALLAS, TEXAS, TO HONGKONG, CHINA FLIGHT."

Article 8. Any contestant may carry with him one or more persons who shall executed waiver as to damage or liability, and provided that the personnel of aeroplane shall not be changed during the course of the contest.

Article 9. The flight must be from Dallas, Texas, U. S. A., to Hongkong, China, or from Hongkong, China, to Dallas, Texas, and the flight must be begun on or after the 26th day of May, A. D. 1927, and completed on or before midnight of the 15th day of September, A. D. 1928, Dallas, Texas, U. S. A., time, in not more than 144 consecutive hours.

Article 10. The time from the takeoff at Dallas, Texas, to the finish of said flight in Hongkong, China, shall not exceed more than one hundred forty-four consecutive hours including all time of stops and actual flying; only three stops will be permitted, one at San Francisco, California, U. S. A., one at Honolulu, and one at Manila or Island of Guam, at which stops the contestant may receive supplies, oil and fuel; but it will not be permitted to re-fuel or receive aid or assistance while in the course of the flight at any other time or place.

Article 11. The entrants and contestants in said flight will also be governed by the contract executed by William E. Easterwood, Jr., and the Dallas Trust and Savings Bank, of Dallas, Texas, a copy of which is as follows:

All obligations and duties as well as all rights growing out of or pertaining to said contest and the subject matter of same shall be performed or enforced at Dallas, Texas, U. S. A., and not elsewhere.

Article 12. The first successful contestant shall be paid the prize of $25,000.00, at Dallas, Texas, upon his completion of the flight and presentation to the Dallas Trust and Savings Bank of a certificate of his having completed the flight to be issued by the Flight Committee upon the recommendation of the National Aeronautical Association; provided, however, that the certificate of the Flight Committee shall be final and conclusive as to the right of any and all contestants, and provided that a reasonable time will be allowed after the completion of the flight for the determining of the successful contestant by the Flight Committee.

.....
Name of County
.....
State or Province
.....
County or Municipality
.....
BEFORE ME.....
.....
.....
(*Title of Officer who administers oath*)

personally appeared .....
who after being by me duly sworn upon oath, deposes and says that he understands the terms and conditions of the Easterwood, Dallas, Texas, to Hongkong, China, Flight Contest as revealed by the preceding statements, rules and provisions hereinabove written, and that he is fully cognizant of their meaning and interpretation; that he desires to enter said contest and agrees to abide by said rules and conditions without reservation or exception.

WITNESS MY HAND this.....day of.....,A. D. 192.....
.....
Contestant

Subscribed and sworn to before me, this .....day of....., A. D. 192..
(SEAL)

.....
Signature of Officer administering oath.
.....
Title of Officer administering oath

"WILLIAM E. EASTERWOOD," JR. CONTRACT
—*with*—
DALLAS TRUST & SAVINGS BANK
AS PRIZE HOLDER

THE STATE OF TEXAS,
COUNTY OF DALLAS.

THIS AGREEMENT, Made and entered into by and between William E. Easterwood, Jr., of Dallas, Texas, hereinafter called Party of the First Part, and the Dallas Trust and Savings Bank, a Banking Cor-

poration with trust powers, having its office and place of business in the City of Dallas, Dallas County, Texas, hereinafter called Party of the Second Part.

WITNESSETH:

1. THAT WHEREAS, The Party of the First Part, being interested in the promotion of aviation, has offered a prize of Twenty-Five Thousand ($25,000.00) Dollars to be given to the first aviator making a successful flight from Dallas, Texas, to Hongkong, China, in an American-made aeroplane in one hundred and forty-four consecutive hours and without making more than three stops in said flight, said flight to be made at any time between the date of this contract and midnight of the 15th day of September, A. D. 1928, Dallas time, and to be governed according to certain rules and regulations to be laid down by a committee to be appointed by the Party of the First Part, which rules and regulations are to be printed on the back of the entry blanks and said rules and regulations, when approved by the committee and Party of the First Part, are to be filed with this contract and become a part thereof. And in order to induce as many contestants for said prize as is possible, the Party of the First Part desires to trustee with the Dallas Trust and Savings Bank said prize of $25,000.00 to be paid to said successful contestant.

2. The Dallas Trust and Savings Bank, the Party of the Second Part, has agreed to accept said deposit of $25,000.00 and to hold same in trust to be paid to said successful contestant as and when the National Aeronautical Association of America and said Committee appointed by said Party of the First Part shall render their decision as to who is said successful contestant, and with the express understanding that the said Party of the Second Part is holding said monies in the capacity as Trustee only and is in no manner to be in anywise responsible to any contestant for said prize other than to pay the money to said successful contestant as and when directed by said committee and the National Aeronautical Association of America, and is in no manner to be liable or responsible for any death, injury or damage to person or property occasioned by any contestant entering said contest.

3. The Party of the Second Part agrees to pay to Party of the First Part interest at the rate of 4% per annum, payable semi-annually on said deposit for and during the time same shall remain on deposit, not to exceed fifteen days after the final date of said flight, namely, September 15, 1928, said 4% to be no part of the prize offered, but to be paid to the Party of the First Part. And in the event said committee and the National Aeronautic Association of America should fail to certify that a successful contestant is entiitled to said prize within fifteen days after the final date of said flight period, then the Party of the Second Part will deliver said $25,000.00 trust fund over to Party of the First Part and said trust terminate.

4. As a further consideration on the part of the Party of the Second Part in accepting said trust, Party of the First Part agrees, obligates and binds himself to save and hold harmless the Party of the Second Part against any litigation which may grow out of the subject matter of this contract, and in the event any litigation is brought against the Party of the Second Part the Party of the First Part agrees to pay to the Party of the Second Part any expenses of defending any litigation, including reasonable attorney's fees, court costs and any and all other expenses incident thereto, and to pay and satisfy any judgment which may be procurd against said Party of the Second Part growing out of the subject matter of this contract, or any matter connected therewith. It being further ageed and understood that any litigation growing out of this contract shall be brought in the City of Dallas, Dallas County, Texas, and not elsewhere.

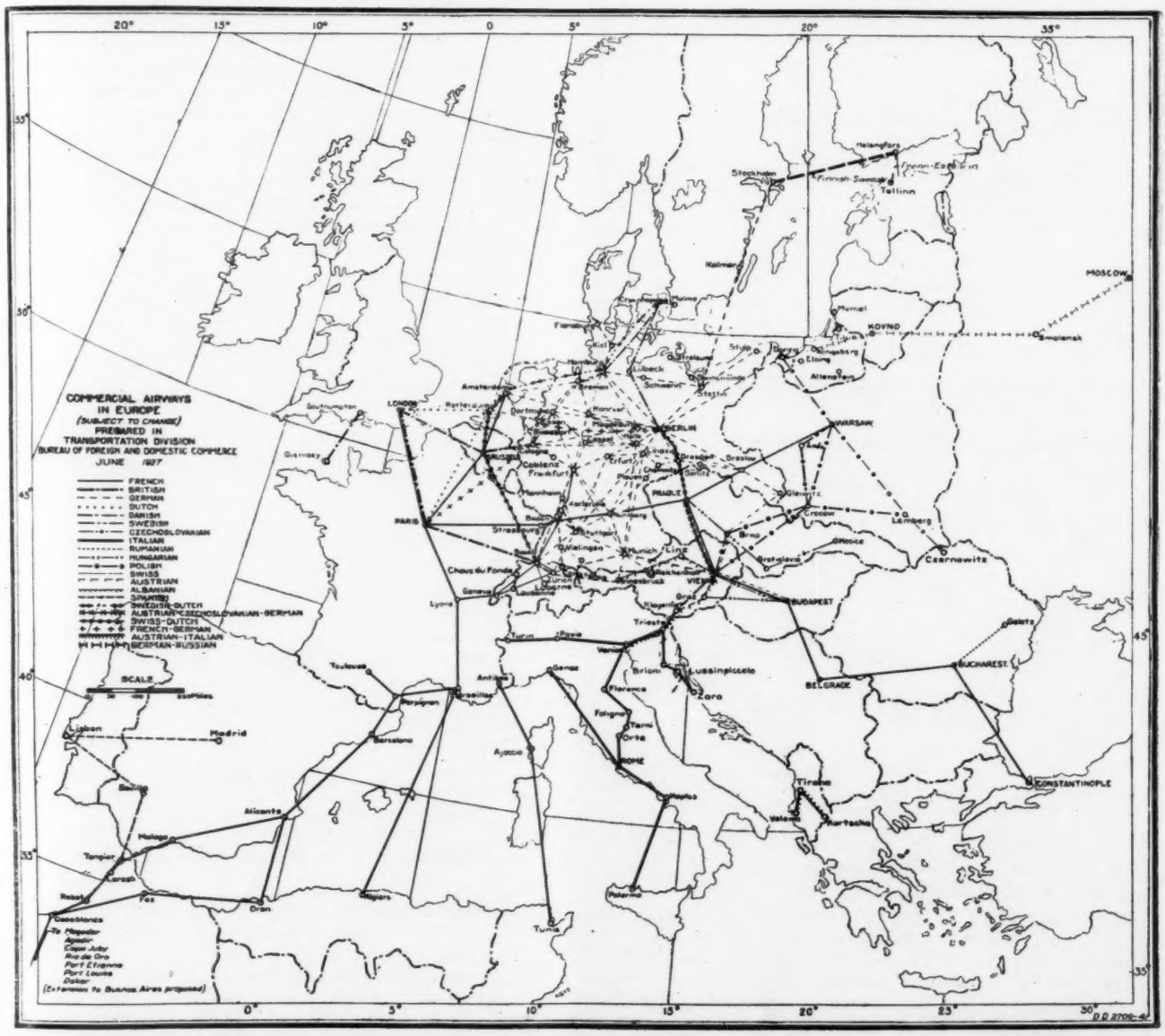
WITNESS OUR HANDS at Dallas, Texas, this 26th day of May, A.D. 1927.

WILLIAM E. EASTERWOOD, JR.
Party of the First Part

ERNEST R. TENNANT, Vice-President.
DALLAS TRUST AND SAVINGS BANK,
(SEAL) By CHRISTIAN C. WEICHSEL, President"
Party of Second Part.

Attest:
JOE AGEE, Secretary.

(A True Copy)

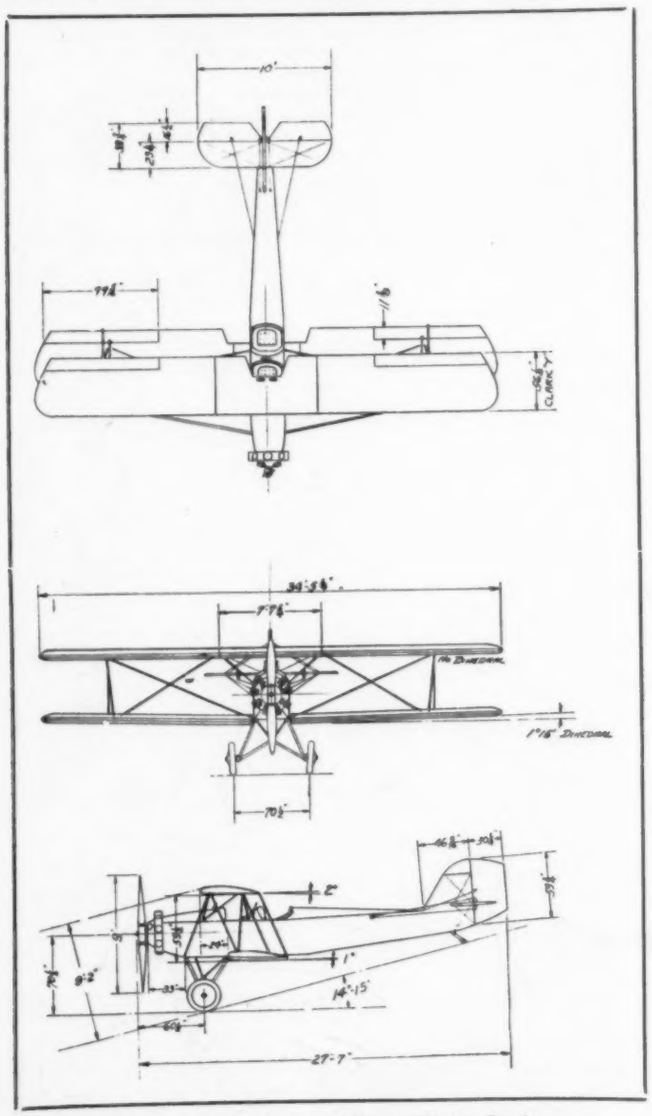


Photographic reproduction of the latest revised map of commercial airways in Europe, which includes the summer schedule

The New Consolidated Courier

Powered with a Wright Whirlwind and Designed to Meet Air Corps Specifications for Advanced Training Plane

IN THE latter part of 1926 the Air Corps issued specifications for a new advanced training plane that would be adaptable to the following classes of service: Flight training with dual controls, fixed gunnery training with synchronized machine guns, flexible gunnery training with guns on a Searf mount in the rear cockpit, for photographic training, and for general cross-country flying. The Consolidated Aircraft Corp. of Buffalo, N. Y., have produced a new biplane with a Wright Whirlwind engine to meet the specifications and have called it the "Courier."



Three view drawing of the Consolidated Courier

The Consolidated Courier is a convertable lang plane or single float seaplane. The controls and installations in both cockpits are arranged so that either cockpit may be made quite clear for any desired purpose. The seats and controls have been arranged so that they may be readily adjusted to suit different pilots. Its cockpits are roomy and all comfortable and it is also equipped with a large baggage compartment. Minor training injuries are avoided by careful padding in the cockpit. The fuselage framing around the cockpit is strong enough to resist the majority of accidents. The center section of the upper is so strong that it would hold the fuselage off the ground if the plane turned over.

The Consolidated Courier embodies the same safety features which have enabled its predecessors, the Trusty and the Husky, to build up such unequaled safety records in their more than two years' use by the Army Air Corps and in the Naval Air Service in their primary training operations. Most of the parts are exactly the same as those in the Trusty and Husky, thus simplifying replacements.

One of the main points in this design is the provision of excellent vision from both cockpits, the large stagger and the cutouts in the upper and lower wings, aiding in bringing this about. The pilot who occupies the forward cockpit can easily see the landing gear.

Good for Cross-Country Work

The performance of the Courier make it extremely valuable for cross-country work because of remarkable ability to get in and out of small emergency landing fields. Its normal gas capacity is 40 gal., but additional fuel is provided in extra tankage to give at least a 600 mi. cruising radius.

The specifications called for a landing speed of less than 55 m.p.h. and a high speed full out at sea level of 120 m.p.h. The following performance was determined by the Material Division, Wright Field, Dayton, O.:

High speed	120 m.p.h.
Landing speed	45 m.p.h. (approx.)
Rate of climb, ground	950 f.p.m.
Service ceiling	16,400 ft.
Absolute ceiling	18,300 ft.

The general specifications are:

Span	34 ft. 5¾ in.
Chord	56⅛ in.
Gap	59½ in.
Wing section	Clark Y
Length	27 ft. 7 in.
Wings area, including ailerons	295 sq. ft.
Ailerons area (4)	30.6 sq. ft.
Weight empty	1807 lb.

Disposable load:

Gasoline	240 lb.
Oil	22 lb.
Crew	350 lb.
Parachute and fixed equipment	48 lb.
Total	2467 lb.
Extra gasoline (20 gal.) and tank for cross-country flying	150 lb.
Total	2617 lb.

American In Flight To Batavia

On June 15 Van Lear Black, of Baltimore, Md., left Amsterdam, Holland, at 8:30 a.m. in a Fokker monoplane, for Batavia, Dutch Indies. He was accompanied by a servant and two Dutch pilots.

At 4 p.m. of the same day the party landed at Budapest. From that city they will proceed to Constantinople, Aleppo, Bagdad, Bandar Abbas, Karachi, Delhi, Allahabad, Rangoon Bangkok, Singora, Sinapore and finlly to Batavia.

Hints on Lubrication of Anzani Engines

Following a series of experiments at the Anzani factory, the manufacturers of the Anzani engines offer to owners of older Anzanis the following hints whereby they can bring the oiling systems of their engines up to the efficiency of the new engines, and to purchasers of new Anzanis the instructions necessary for the installation of their engines.

The lubrication system of a radial air-cooled air-craft engine has two major functions to perform, viz.: to lubricate the motor and to carry off excess internal heat.

The usual manner of performing these functions is to pump oil into the crankshaft under pressure, from whence it slings off of the crank pin and bathes the inside of the engine. Part of the oil collects in the bottom of the crankcase and is pumped back to the tank and part is vaporized and beaten into a spray and exhausted from the breather pipes.

Many Systems Abandoned

In order to gain a maximum of cooling effect with minimum oil loss, many schemes have been evolved to allow the passage of a maximum of oil through the crankshaft with a minimum amount to the interior of the motor. As the least bearing wear upsets all of these schemes and results in excessive oiling and breather loss, Anzani engineers abandoned them after experiment.

The original lubricating scheme consisted of a gravity feed oil tank feeding into a chamber by gravity; from the chamber a cam driven plunger pump forced metered quantities of oil to the main bearings and through drilled crankshaft passages to the crank pins, from whence the oil was thrown off and lubricated the interior of the engine. After performing its lubricating function, it vaporized and blew out of the breathers, thus filling its cooling function. This system was very satisfactory, though wasteful of oil, which caused some operators to evolve various schemes for cutting down the oil supply. This reduced the supply of oil for internal cooling and resulted in overheated pistons and bearings.

After much experiment, the following system was evolved:

Remove the breather pipes from the top of the crankcase and plug the holes, remove the drain plugs from the bottom of the crankcase and put a collector tank below this level, connecting it with these drain openings. Fit the breather pipes to the top of this tank on extension pipes, carrying them high up.

The excess oil will now drain into this tank and as all breathing is done through it, all oil ordinarily lost as vapor and spray will condense and collect in this tank, from whence it may be pumped to the gravity nourrice tank by a hand pump or by a windmill or power driven return pump up to an overflow level in the nourrice tank.

The engines, up to and including 1927 Models, are fitted with the well known plunger pump, while the 1928 Models will be fitted with the new rotary pump with a controlled by-pass.

With the system described, always operate the oil pump at full feed, viz.: full stroke on plunger pump (no spacer gasket under body flange) and with the by-pass handle of the new pump pointing towards the letter "O" stamped on the cover.

When the plunger pump is removed for any cause whatever, be sure to inspect the little check valve at the base and see that the oil aspiration holes in the base of the pump are clear. It is also a good plan to stretch the spring to insure the plunger following the operating cam.

With the ordinary oil a pressure gauge placed in the line between the pump and the oil feed into the bearings should give a reading of five to six pounds, which will drop somewhat with a hot engine.

Tested With Castor Oil

At the Anzani factory the engines are tested with the highest obtainable grade of genuine cold pressed Castor oil, as this lubricant is in general use in France for aeronautic work and for many motor cars.

For those who desire a mineral blend castor, the company advises the use of Wakefield's Castrol, Grade R. This oil can be obtained from the C. C. Wakefield Oil Company in New York or its agents.

Anzani engines cover a range from 30-35 hp. to 600 hp. The American distributer, the Brownback Motor Laboratories, is located at Norristown, Pa.

Vought "Corsairs" at Mitchel Field, Garden City, N. Y. The plane at left is used by the Assistant Secretary of the Navy, Hon. E. P. Warner on flights to fulfill his official engagements. The second Corsair, was used by Capt. E. S. Land, U. S. N., Assistant Chief of the Bureau of Aeronautics, during the Welcome Home celebrations in honor of Col. Chas. A. Lindbergh. Capt. Land also flew the same plane to St. Louis to take part in the ceremonies there as the Navy's official representative.

Reconnoitering Over Nicaragua

(*Continued from page* 15)

less of a joke, and it seemed such a hopeless thing for a man to expect to hit an airplane in flight with a rifle. Two days later when I went back as pilot, I circled the same place to see if we would be fired on. This time I changed my mind about its being a joke. One bullet went through our upper wing, missing my head about 8 inches and the gas tank by even less. Still it seemed that more or less luck must have entered into it, but I was convinced for good and all on the following Monday. Admiral Latimer and General Feland ordered three or four planes on a reconnaissance flight in the vicinity of Leon. It was on this flight that I located General Parajon's Army and they located me, to the extent of fifteen hits on the plane, shooting away part of my rudder bar, nearly severing one of the control wires and causing me to hasten my departure from the vicinity. After getting out of range, blinking my eyes a few times, seeing that my observer was OK, I came back and gave the gooks the surprise of their lives. A machine gun on an airplane was news to them. I doubt very much if they fire at another American airplane for some time to come.

Circular On Torsion of Wing Framework

The Air Corps has recently published an Air Corps information circular on the progress in the study of torsion of wing framework. The objects of the investigation are to develop methods for analyzing the actual torsional rigidity, and to determine the type of wing structure which, for a given weight, has the greatest torsional rigidity.

The most important results thus far obtained toward accomplishing the principal objects of the study are as follows:

1. It has been found that the torsional rigidity of a cantilever wing structure depends mainly on three characteristics:
   (a) The stiffness of the spars.
   (b) The location of the spars along the chord.
   (c) The type and design of the drag structure.

Of these three, the last characteristic has proved to be the most critical and the most difficult to handle. However, all are dependent for their determination upon the airfoil used, the movement of the center of pressure, the degree of torsional stiffness required, and the maximum weight to be permitted.

2. A method has been discovered for computing approximately the stresses in a truss type wing frame subjected to simple torsional loads, and which has several redundant members, by the use of static equations. The stresses are conservative for members of the drag structure and can be used for comparing different types of drag structures in regard to their contribution to the torsional stiffness of the frame. This method of comparison is much more rapid than any previous methods available.

3. A criterion for determining which members of a given metal-truss type wing frame are most important in regard to the stiffness of the whole frame, under any loading, has been worked out. For torsional loads, certain members of the drag structure are generally the most important.

4. Tests made with different sizes of tie rods for drag bracing proved the importance of using the proper design of drag structure in order to obtain torsional stiffness. An increase in the size of rods, which increased the total weight of the frame tested by only 13.3 per cent, decreased the torsional deflections by 56 per cent.

5. It was found that, in general, the torsional deflections vary uniformly in direct proportion to the torsional couple, or to the torsional moment of all the loads about an elastic axis.

6. Deflections obtained by computation compared closely with those measured in the experiments and were found to be on the conservative side.

7. The tests indicated that there must be an elastic axis, parallel to the spars of a cantilever wing frame, about which the outer members rotate in circular arcs when the frame is subjected to torsional moments. The tests did not give directly, the location of this axis. However, a method was worked out, in the analytical study, for using the test data to check the theoretical location. A very close check was obtained, by the use of this method and data from tests made, on the theoretical location determined by analytical computations.

8. The theoretical location of the elastic centrum can be located quite accurately by means of the Method of Least Work for computing stresses and deflections. However, this process is too long and tedious for practical design work; therefore a more rapid method was sought. A method was found which gives the approximate horizontal location very readily.

9. The effect of combined bending and torsion loadings upon the torsional deflections was determined by the tests and the analytical study. A formula was derived which may be used for predicting the torsional deflections, under any case of combined loadings, from experimental data for simple torsion loadings.

10. By means of the Least Work computations, a definite relation was found for the distribution of stresses in a cantilever wing frame acted upon by simple torsional loads. These computations showed particularly that the stresses in members of the drag structure are the greatest at the outer drag bay and decrease towards the supports. The stresses in the spars are the smallest at the outer end and increase toward the supports.

A complete illustrated description of the various tests made, with detail results and conclusions reached, is given in Air Corps Information Circular No. 584, which has been prepared by N. R. Bailey, Material Division, Air Corps.

Royal Canadian Air Force 1927 Program

Each year aviation is playing a greater part in the development and conservation of the natural resources of the Dominion. Aerial transportation is solving the most urgent problems of the forester, surveyor, geologist, and explorer in their work in the more remote and unexplored parts of the country as well as in the settled districts and new applications of aerial methods to other lines of research are constantly enlarging the field of usefulness of the airplane.

Civil aviation in Canada is only seven years old, but already it has a part in the regular activities of many of the departments of the Government and is of primary importance in forestry and mapping and their allied activities.

The 1927 program of the Royal Canadian Air Force in civil operations for government departments includes the following work:

Forest Service.—In southwestern Alberta the Rocky Mountains forest reserve from near the International Boundary to the Saskatchewan river is protected by aircraft fire detection patrols. In Manitoba and Saskatchewan the airplane serves both in the detection and suppression of fires over the forested areas to the east and north of lake Winnipeg and westerly across northern Saskatchewan to the Alberta boundary.

Topographical Survey.—Vertical aerial photography in connection with mapping the Rouyn mineral area and in the Gatineau, Batiscan, and Ste. Anne de Beaupre districts in Quebec. Vertical photography in western Nova Scotia and in the Muskoka, Sudbury, and Temiskaming districts of Ontario. Oblique aerial photography for mapping the Quetico, Lake of the Woods, and Lake Nipigon districts in Ontario. In Manitoba vertical photography in the Riding Mountain district and oblique photography east and west of lake Winnipeg. In Saskatchewan vertical photography in the Prince Albert district and oblique photography in the Lac la Ronde and Lac Mironde areas. Vertical photography in the vicinity of Red Deer, Alberta, and on Vancouver Island, British Columbia. Oblique photographs of the Wood Buffalo park in the Northwest Territories.

Canadian National Parks.—Fire detection patrols in the Waterton Lakes park and Rocky Mountains park. Pictorial views of sites of historic interest when circumstances permit.

Dominion Water Power and Reclamation Service.—Vertical and oblique photographs in connection with the development of power projects

This New WACO TEN

WACO TEN (WHIRLWIND)

Puts A World of Meaning Into —

Extra Quality — Appearance — Comfort — Performance and Safety. Aviators who have seen it — flown it — pronounce it the best buy in the Commercial Field.

Engineered to withstand motors from 90 to 250 horse power imagine the factor of safety, with the standard OX5 equipment at the above price.

Not only additional safety — but beauty far beyond anything you have ever expected — performance that is unequaled — comfort that only a trial will show — operating and landing devices heretofore found only on the most costly military types.

These and many other features on the WACO TEN make it the closest priced Airplane in the world.

We will demonstrate and prove it to any dealer who comes to our factory.

WACO
AIRPLANES
MANUFACTURED BY ADVANCE AIRCRAFT CO., TROY, OHIO

in Ontario and Quebec. Vertical photography of Rainy Lake, Ontario, and the Nelson and Churchill rivers in Manitoba and Saskatchewan.

International Boundary Commission.—Vertical and oblique photography over the International Boundary from lake of the Woods to Emerson, Manitoba.

Department of Indian Affairs.—Transportation of Treaty-paying parties in northern Manitoba.

Department of National Revenue.—Transportation of officers of the Preventive Service as necessary.

Department of Marine and Fisheries.—Aerial patrol of Hudson straits to determine ice conditions in connection with navigation of Hudson bay. Patrols for the prevention of illegal fishing on the Pacific coast.

Department of Agriculture.—Experimental dusting for the prevention of wheat rust in the Prairie Provinces and for the control of the Spruce Bud worm in Cape Breton island.

Department of Mines.—(In co-operation with the Topographical Survey.) Vertical photographs in mineralized areas in Ontario and Quebec.

Department of Public Works.—Vertical and oblique photography of harbours and harbour works.

Department of Railways and Canals.—Vertical photography of Welland canal.

In addition to the work of the Royal Canadian Air Force extensive programs are being carried out by provincial governments and private interests. The province of Ontario operates its own flying service and during the period of fire hazard, fire detection and suppression, patrols are carried on throughout northern Ontario. Forest type mapping is also carried out in a large scale, as well as exploration in the district of Patricia and the transportation of survey parties and government officials.

In Quebec the work is undertaken by commercial companies, under contract, for the provincial government. Extensive programs of vertical photography for forest mapping are being undertaken in the Lake St. John and Gaspe districts and much transportation for survey parties on the north shore of the gulf of St. Lawrence is done by aircraft.

Commercial services are operating air lines in the mining districts of Rouyn, Quebec, and of Red Lake in western Ontario, and the airplane has made possible the intensive prospecting of these regions in the last two or three years. Supplies and equipment for the survey of Churchill harbour were transported, under contract, to Churchill this Spring by a commercial company at a great saving of time and money.

Ocean Flights Bring Foreign Inquiries

That the recent epochal flights of Lindbergh and Chamberlain were of direct trade promotional value is indicated by the fact that the Automotive Division of the Commerce Department has received two cabled inquiries from Germany and Argentina relative to the purchase of duplicates of the planes used in the respective flights.

The inquiry from Argentina stated that money had been raised to finance a flight across the South Atlantic via Brazil and Dahar, Senegal, Africa. For this trip it is proposed to use an American plane and quotations were asked C.I.F. Buenos Aires, on the same types as were used by the two American transoceanic flyers. These quotations were furnished within twenty-four hours after receipt of the inquiry.

In connection with Argentine aviation, it is pointed out by the Automotive Division that the President of the Republic on June 10th requested congressional authorization to spend the sum of $1,605,000 for a national aviation school at Buenos Aires, an air port and various operations of the new civil aviation bureau.

Mexico Purchases American Plane

With the idea of improving its equipment for long distance flying in Mexico, the Cia Mexicana de Aviacion, S. A., has ordered a new American monoplane with a capacity of four passengers and pilot. This machine is equipped with a 235 hp. engine of the radial air-cooled type, and it is believed this will greatly augment the present facilities of passenger carrying airplanes which this company are now operating in the Tampico district.

Government to Supervise Air Mail Service

According to a recent oral statement of the Post Office Department, although the Department relinquishes the direct operation of Air Mail Service, it will continue to exercise supervision over the routes and project new lines.

Greater attention, it was said will be given to the development and use of seaplanes in the service and to this end a new route will be established between Key West and Havana.

The seaplane, it was pointed out, could also be used economically on a route between Chicago and New Orleans, via St. Louis, and the Mississippi River. This route, if established, would touch at Memphis, Tenn., and Jackson, Miss. The Department already has sought bidders for such a route, but it has not yet been able to select a contractor because of the financial requirements of the service. At the proper time the Department, it was stated, will make proposals, and another effort will be made to select a contractor on a route between Chicago and Birmingham, Ala., via Indianapolis, Louisville and Nashville. As in the case of the route between Chicago and New Orleans, the Department has advertised for bids for the Chicago-Birmingham route, but no satisfactory proffers have been made, it was said.

In addition to its transcontinental lines between San Francisco and New York City, the Department now has the following contract air mail services listed:

C. A. M.—1. Colonial Air Transport, Inc., 270 Madison Ave., New York, N. Y. Boston, Mass., by Hartford, Conn., to New York, N. Y., and return.

C. A. M.—2. Robertson Aircraft Corporation, Anglum, Mo. Chicago, Ill., by Springfield and Peoria, Ill., to St. Louis, Mo., and return.

C. A. M.—3. National Air Transport, Inc., Room 620, 506 S. Wabash Ave., Chicago, Ill., by Moline, Ill., St. Louis and Kansas City, Mo., Wichita, Kans., Ponca City, Okla., and Oklahoma City, Okla., to Fort Worth and Dallas, Texas, and return.

C. A. M.—4. Western Air Express, Inc., 117 West Ninth St., Los Angeles, Calif. Salt Lake City, Utah, by Las Vegas, Nev., to Los Angeles, Calif., and return.

C. A. M.—5. Walter T. Varney, P. O. Box 722, Boise, Idaho. Elko, Nev. by Boise, Idaho, to Pasco, Wash., and return.

C. A. M.—6. Ford Motor Company, Dearborn, Mich. Detroit, Mich., to Cleveland, Ohio, and return.

C. A. M.—7. Ford Motor Company, Dearborn, Mich. Detroit, Mich., to Chicago, Ill., and return.

C. A. M.—8. Pacific Air Transport, Inc., 39 Balboa Bldg., 593 Market St., San Francisco, Calif. Seattle, Wash., by Portland and Medford, Ore., San Francisco and Bakersfield, Calif., to Los Angeles, Calif., and return.

C. A. M.—9. Northwest Airways, Inc., care St. Paul Association, St. Paul, Minn. Chicago, Ill., by Milwaukee and La Crosse, Wis., to St. Paul, and Minneapolis, Minn., and return.

C. A. M.—11. Clifford Ball, 503 Standard Life Bldg., Pittsburgh, Pa. Cleveland, O., by Youngstown, O., and McKeesport, Pa., to Pittsburgh, Pa., and return.

C. A. M.—12. The Colorado Airways, Inc., P. O. Box 82, Capitol Hill Station, Denver, Colo. Cheyenne, Wyo., by Denver and Colorado Springs, Colo., to Pueblo, Colo., and return.

C. A. M.—14. Stout Air Service, Inc., 2-267 General Motors Bldg., Detroit, Mich. Detroit to Grand Rapids, Mich., and return.

C. A. M.—17. National Air Transport, Inc., Room 620, 506 S. Wabash Avenue, New York, N. Y., by Cleveland, O., to Chicago, Ill., and return.

C. A. M.—18. Boeing Airplane Company and Edward Hubbard, Georgetown, Station, Seattle, Wash. Chicago, Ill., by Omaha, Neb., Cheyenne, Wyo., Salt Lake City, Utah, Elko and Reno, Nev., to San Francisco, Calif., and return.

C. A. M.—19. Pitcairn Aviation, Inc., Land Title Bldg., Philadelphia, Pa. New York, N. Y., via Philadelphia, Pa., Washington, D. C., Richmond, Va. Greensboro, N. C., and Spartanburg, S. C., to Atlanta, Ga., and return.

Note: Routes 10, 13, 15 and 16 have been discontinued.

Alexander Flying School

The Alexander Aircraft Flying School, located at Alexander Airport, Denver, Colo., has twenty-four students enrolled at present. The students are being instructed by Benny Howard and Earle Parker, and the Eaglerock planes are used for instruction.

The school endeavors to give the students the correct knowledge and fundamental habits to eventually become professional pilots. Before soloing, the student is taught maximum climbs, stalled flight, tail spins and vertical banks.

A ground course is also given, consisting of a series of lectures on airplanes, engines, navigation, meteorology and air commerce rules, but this course is optional.

Keeping Pace with the Times

Sunday Crowds at Curtiss Field

The recent trans-Atlantic flights of Lindbergh and Chamberlin have given tremendous impetus to public interest in commercial flying.

Curtiss Flying Service, Inc. is keeping pace with the times. This "oldest flying organization in the world" has recently increased its operating equipment and is now better fitted than ever to provide all classes of commercial flying service.

Instruction: Special new flying course to qualify students as Reserve Officers. Also standard short flying course.

Passenger Service: Short "pleasure hops" or fast long-distance transportation — at a moment's notice.

Industrial Application: Agricultural dusting, forestry patrol, photographic mapping, etc.

The Curtiss Flying Service, Inc.

Garden City, N. Y.

"Oldest Flying Organization in the World."

Curtiss

FOREIGN AERONAUTICAL NEWS NOTES

By Special Arrangement with the Automotive and Transportation Divisions, Bureau of Foreign and Domestic Commerce

Switzerland Air Service

The first regular air service in Switzerland was started by the Ad Astra Aero Co. of Zurich in 1919, when that company's craft made 160 flights between Zurich, Berne, and Lausanne, and carried a few passengers and 23,520 pieces of mail. It was learned with the gradually widening experience that longer distances would have to be flown over regularly and at high speed. Thus, in 1924 this company extended its service to Munich and Vienna.

Later cooperative arrangements were developed between Swiss and other companies. The Ad Astra cooperates with the German Luft-Hansa company in the Geneva-Budapest service, the Swiss company operating to Zurich and the German company from that city eastward. The two companies cooperate in the same way in the Geneva-Lausanne-Zurich-Stuttgart-Erfurt-Halle-Berlin service, the Ad Astra serving between Geneva and Zurich. It is planned to extend this service southwestward to Geneva-Marseilles-Barcelona-Madrid, using the German company's equipment and personnel. Another form of cooperation is the arrangement by which the other Swiss company (the Basel Air Service Co.) and the Rogal Aviation Co. of Holland, operate the new Geneva-Zurich-Basel-Brussels-Rotterdam service. The craft of one company alternate with those of the other between Basel and Rotterdam.

The Swiss air channel between the Alps and the Jura Mountains is especially suitable to traffic between central and western Europe, and developments point to the increasing importance of Swiss cities as air traffic centers. Efforts are being made to increase the movement in all directions of valuable and perishable goods by air.

The necessary subsidies for the air services have been provided largely by the cantons, communes, and associations, the Federal contribution being limited to some 150,000 Swiss francs, $30,000 for the carriage of mail and prizes for regularity of service. It is planned to have the National Government assume greater authority and pay a larger subvention. Light-houses, signal stations, intermediate landing fields for night flying, and improved weather reporting are subjects of public discussion.

The Second International Aeronautical meeting will be held between August 12 and 21, 1927, at Zurich. Its program will be national and international in nature, and great interest is expected to be aroused.

Planes Must Advise of Egyptian Flights

The Ministry of Foreign Affairs of the Egyptian Government in a published statement advises that the Ministry of Communications in Cairo receives reports, from time to time, announcing the arrival of foreign airplanes in Egypt without any previous notice, and is, therefore, unable to take the necessary measures to facilitate the passage of such aircraft through the country. The Ministry has expressed its desire to receive notice of the flight of foreign airplanes to Egypt, at least fifteen days before their arrival, giving the following details: Type of plane, whether land or sea; whether it is military or civil; its marks of identification; the pattern and kind of engine; names of its pilot and men; names of its passengers, if any; whether it carries firearms or ammunition, wireless apparatus, photographic equipment, etc.; place whence it comes; its destination; general information on the flight and the places where the airplane intends to land in Egypt.

Increase in Danish Air Service

The Danish 1927 flying season opened April 19, when the Danish Air Transport Co. commenced its Copenhagen-Hamburg service. Swedish and Dutch aviation companies also commenced their traffic over Copenhagen. The German aviation interests continued their service to Berlin, which has been kept open during the entire Winter. Attempts were made to carry on the Danish service from Hamburg to Cologne, but this did not work out satisfactorily. It has been decided that the Danish Air Transport Co. will operate over the route Copenhagen-Hamburg only, using the new four-engine Jabiru airplanes, capable of carrying ten passengers, and small Fokker machines with six-passenger capacity. The Swedish company's airplanes are of the three-engine Junker type; the Dutch, Fokkers F VII A; while the German line planes are Junkers, Albatrosses, Dorniers, and Rohrbachs.

With the services offered by the German, Dutch, Swedish, and Danish lines, Copenhagen is assured of a sufficient number of daily planes in and out to care for the steadily growing air traffic, both passenger and freight. It is possible to travel from Copenhagen by airplane and reach on the same day the following cities: London, Paris, Brussels, Frankfort, Munich, Vienna, Prague, and Danzig. In two days' travel time the following cities can be reached: Zurich, Geneva, Marseilles, Barcelona, Madrid, Rome, Venice, Budapest, Belgrade, Bucharest, Constantinople, and Warsaw. This is made possible by the excellent connections available in Hamburg and Berlin.

Low-Powered Planes in International Records

For the first time low-powered planes will be admitted to international racing records, according to a decision made by the Federation Internationale Aeronautique. The ruling went into force Jan. 1, 1927. In future, four new records will be established: 1, longest distance in a straight line, 2, longest distance in a closed circuit; 3. Greatest speed for 100 km.; and 4. Highest altitude. For each of these there will be two categories: The first for machines weighing a maximum of 200 kg. (440 lb.) and consuming a maximum of 12 kg. of gasoline per 100 km. The second for machines weighing from 200 to 400 kg. with a consumption of gasoline less than 20 kg. per 100 km. The new competitions are expected to assist materially in popularising the low-powered airplane, which may be expected to be the popular sport vehicle of the future.

French 1927 Air Traffic

Traffic handled on three important French air lines during January, 1927, is shown in the following table:

Name of Company:	*No. of Passengers*	*Packages carried lb.*	*Mail Carried lb.*
Compagnie Generale d'Entreprises Aeronautiques			
LINE:			
Toulouse-Casablanca	33	1,894	15,393
Marseilles-Perpignan	4	101	2,313
Casablanca-Oran	28	520	1,600
Casablanca-Dakar	7	152	1,554
Oran-Alicante	16	121	571
Compagnie Air-Union			
LINE:			
Paris-London	73	44,761	152
Paris-Marseilles	22	956	52
Antibes-Ajaccio-Tunis	34	77	33
Societe Generale de Transports Aeriens			
LINE:			
Paris-Amsterdam	18	4,068	19
Brussels-Cologne	14	1,450	135

PITCAIRN

PLANES

Pitcairn Fleetwing Deluxe

THE Pitcairn Fleetwing Deluxe—thoroughly modern in design—is characterized throughout by the care and craftsmanship of Pitcairn construction. This three-place plane, powered with a new OX 5 motor, is distinguished by speed, maneuverability and quality of construction.

We welcome your personal inspection and trial of the Pitcairn Fleetwing Deluxe. Illustrated descriptive pamphlet will be mailed on request.

PITCAIRN AIRCRAFT INC

LAND TITLE BUILDING PHILADELPHIA

Side Slips

By ROBERT R. OSBORN

It seems that you can't tell where "this airplane business" will be next. A few issues ago we made note in this space that airplanes, motors and propellers were being used in German operas and in New York musical comedies. An advertising card, evidently sent out by a certain company, indicates an even more surprising development, however. The announcement on the card is "Extra! Extra! Hear 'Lucky Lindy' on your phonograph. Now being demonstrated by your Dealer. Hear the whirr of the airplane motor. Ask for Record No. 52029."

Having thus established the airplane motor as a musical instrument, we think that this company might have had the courtesy to mention the artists who were playing. This record, for insance, should have had the credit line "'Doc' Kinkade at the carburetor and throttle; Boedecker at the valve rods and spark control. Symphony arranged by Mr. Charles Lawrance."

To help develop this musical trend in the industry, might it not be possible to get together a quartet in time to travel with the Ford Tour? As possibilities for the "Airplane Engine Quartet" we'd suggest Curtiss D-12, bass; Pratt and Whitney Wasp, baritone; Wright Whirlwind, baritone; and Wright-Morehouse, tenor.

* * * *

Recently one of the New York papers printed a picture of the instrument board of Commander Byrd's Trans-Atlantic Fokker, calling attention to the "six gear shift levers" mounted in the center. All of them being used, the article might have added, for shifting into "high".

The report has reached us, unconfirmed as yet, that one of the more rabid souvenir hunters had collected the now-famous telephone wires that Lindbergh might have taken with him, if he hadn't been twenty feet above them.

* * * *

Concerning Chamberlin's recent successful flight in the Bellanca monoplane, another New York paper stated in a descriptive article, "His vow to end the flight with a 'dead stick' meant in the vernacular of the airdrome that he was going to fly until his last drop of fuel was fired and then effect a landing with a dead motor, the 'dead stick' referring, of course, to the control stick, which loses its power to direct the ship without the heavy pull of the motor."

This astoundingly well-informed writer ends his article with, "In the densely populated country Chamberlin flew over in Germany he probably had no difficulty in finding a landing field."

The reporter for this paper may have gained his impression concerning the landing fields from Lindbergh's recent experiences. In his case the better landing fields everywhere were certainly marked by "densely populated country". How the writer could have become so grossly misinformed concerning the "dead stick" is rather surprising, though. We thought that everyone knew that all pilots are in the habit of chewing a stick of gum while flying, and in the excitement of a forced landing without power, neglected to work their jaws, hence the term "dead stick".

* * * *

Mr. Russell Crouse, columnist of the New York Evening Post, comments on Ambassador Herrick's visit to the United States, surmising that he is probably coming over to recover the pajamas he loaned Colonel Lindbergh. Not that we're casting any aspersions on anyone at all, y'understand, but having a few Army fliers for acquaintances, we'd say that, with all these hot nights we're having, borrowed pajamas would be returned without hesitation.

THE RECORD-BREAKING BELLANCA MONOPLANE
Powered with Wright "Whirlwind" 225 h.p. Engine
Equipped with

SCINTILLA

Aircraft Magnetos

SCINTILLA MAGNETO COMPANY, INC.

Contractors to the U. S. Army and Navy. SIDNEY, NEW YORK

AIRPORTS AND AIRWAYS

Hadley Field

By J. E. Whitbeck

Hadley Field, New Brunswick, N. J., will be continued as a first class flying field when it is relinquished by the Post Office Department on July 1. This field has many advantages that have helped to create the credible records of the Air Mail Service. The weather conditions are excellent; in fact, best of any location within twenty-five miles of New York City. The field is completely lighted for night flying operations and is the only field to be so lighted in the metropolitan area. It is also the junction of the Government's lighted airways to Chicago, San Francisco, Boston and Atlanta. There is a meteorological station in the field where complete weather information is always available. There is also radio direction beacon and radio telegraph service for communications.

The location of the field is adjacent to five trunk line railroads: Pennsylvania, Jersey Central, Lehigh Valley, Baltimore & Ohio, and Reading, and affords ample transportation with unlimited service direct to the Pennsylvania station and the General Post Office, New York City. There are 249 trains daily. A regular bus service makes connection from the field to these railroads and with the field located just between the Lincoln and the William Penn highways, and with a concrete highway passing the field, and connecting these two main highways, the vehicle transportation is ideal.

The labor conditions are the very best. There is nearly a two million population within sixteen miles of the field and the material and supply markets are of the finest and conveniently near by.

The field is within ten miles of deep water. However, it is 132 ft. above sea level and is just out of the industrial smoke and haze area. It is further protected from smoke and haze by the prevailing winds. It is so located that the air routes to other large cities do not pass over the congested area of New York City.

Several new hangars are already under construction, as is a complete service station and administration building. Additional acreage has already been secured and, when completed, the field will have runways 3,000 ft. long in four directions. The surface of the field is of excellent turf and affords ideal flying conditions.

Hadley Field will be under the personal management of the writer who for several years was in charge of the New York to Chicago Air Mail Service. During the year he has been engaged in the selection, preparation and equipment of flying fields for several of the largest cities in the country, but henceforth will devote his entire time to Hadley Field.

Spokane, Wash.

By E. Harve Partridge

Forest patrol over national park areas of Eastern Washington, Northern Idaho and Western Montana has been resumed for this season. Two De Havilland planes are in ser-

COLONEL LINDBERGH

appreciates the advantages of a universal type of

AIRPORT FLOODLIGHTING

At Maywood, Illinois he lands with the B.B.T. Air Mail Type Landing Floodlight.

On his arrival at LeBourget the same type of light aided in his safe landing.

At Brussels and Croydon (London) other similar B.B.T. floodlights are in operation.

And again when he flew to Washington to get the "Spirit of St. Louis" he landed at Anacostia and took off with the aid of the B.B.T. Floodlight like those at Maywood, LeBourget, Brussels and Croydon.

Many other nations have recognized the advantages of "Daylight at Night" illumination of maximum intensity produced only by the B.B.T. Air Mail Type Landing Floodlight.

Catalog gladly sent on request.

B.B.T. CORPORATION OF AMERICA

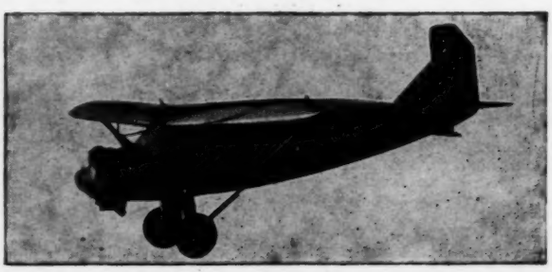
ATLANTIC BUILDING PHILADELPHIA PENNA.

TO Clarence Chamberlin, Pilot and Giuseppe Bellanca, Designer, we offer our congratulations for bringing new honor to American aviation.

The Wright powered Bellanca monoplane was equipped with a

BOYCE MOTOMETER

on its flight from New York to Eisleben,



The MOTO METER CO., Inc.

4 Wilbur Avenue
Long Island City, New York
Chicago Office: 820 Tower Court

vice. Nick B. Mamer, who has had charge of flying operations since the first aerial patrol in this district was started in 1925, is again in his old position.

Mamer's Swallow has been hopping over much country in the last few days. He flew to Seattle, a distance of 300 mi., with C. H. Wells, president of the Wells-Chevrolet company, when the latter had two business appointments in the two cities, six hours apart. They crossed the Cascade mountains at a height of 7,000 ft. Two days later the same pilot took Henry Doepke to Walla Walla, a 160 mi. trip, to permit the keeping of a business appointment. Seven students are enrolled in his flying school.

Major John T. Fancher, National Guard Commandant, with Harlan Peyton, president of the National Air Derby association, flew to Seattle recently to tell Seattle men how to raise money for a trans-Pacific flight. The two Spokane men won the air derby and national air races for Spokane and gave the coast city the benefit of their experience.

Herb Stone, Idaho guide, is giving up pack horses for an airplane. He has purchased a new 150 hp. Standard from the Mamer Flying service and will use it to take sportsmen into Idaho's hunting paradises. He recently completed his flying course with Nick B. Mamer.

Harry Dallas, an employee of the Boeing Airplane Company of Seattle, purchased a used Standard from Charles Holter of Spokane and will use it for commercial purposes in Seattle. He expects to fly the plane home, although he soloed but a few days ago.

Major Fancher and Lieut. C. V. Haynes, National Guard instructor, expect to spend all of July flying over the course of the air derby race between New York and Spokane, mapping intermediate fields and making arrangements for caring for the fliers when they land for servicing during the race.

Members of the 116th National Guard Aerial Observation Unit have gone to Camp Lewis for the annual two weeks encampment. The Guard's Jennies, the one Douglas and the Army De Havilland of Lieutenant Haynes, were flown to the camp, a distance of 300 mi.

Fort Worth, Tex.

The new municipal airport, recently constructed at Fort Worth, Tex., is owned and operated by the city. For this purpose, during the year, the city government appropriated $30,000 which has been spent in laying out the field and constructing buildings.

On Monday, June 13, the new hangar was officially accepted by the City of Fort Worth. This is of modern concrete and steel construction, fireproof throughout, 180 by 66 ft., with doors opening on the side. It has a sloping floor and is equipped with a shop, storerooms, dormitory, waiting room, and offices.

July 16-17 have been the two days selected for the formal opening of the airport. On these days there will be races, contests and a general demonstration of flying. Prizes of $1,000 have been donated for the events, as well as other prizes from the merchants of Fort Worth.

Name Field For Colonel Lindbergh

Albany's new flying field will be named in honor of Col. Charles A. Lindbergh, Mayor Thacher has announced. The field, which will be located west of the city, will replace the present landing place on West Erlo Island in the Hudson River.

Bennington, Vt.

By John J. Baker

Through the generosity of George M. Hawks, a local business man, a tract of ground on the heights, southeast of the village, has become available for use as an aviation field, to be known as the Bennington-Lindbergh Aviation Field. The field is about five minutes walk from the center of the town and markers will be placed on it, it is hoped in time for machines to use during Bennington's Sesqui-Centennial Celebration, the week of Aug. 16.

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UNITED STATES AIR FORCES

Secretary Davison Ends Inspection Trip

Assistant Secretary of War, for Aviation, F. Trubee Davison, on June 7 completed an inspection trip which covered practically all of the principal air stations in the United States, a flying distance of approximately 6,000 miles and including Air Corps activities on the West Coast.

The outbound flight was made from Washington to San Antonio and from San Antonio to San Diego, Calif.

An extremely interesting proof of the skill and ability of the Army Air Corps pilots was demonstrated while en route from St. Louis to San Antonio. Warnings of a cyclone had been given before the takeoff at St. Louis, but pilots were advised that they could proceed safely for five hours. Adverse winds were encountered and an unexpected landing was made at Springfield, Mo., in an unprepared field. Within an hour after Secretary Davison's plane was on the ground, twelve other Army planes safely landed in this field to take on fresh gasoline and await the passing of the cyclone. None of the thirteen pilots had ever landed in this field before and all planes got down and got away in spite of the adverse conditions.

While at San Antonio, Mr. Davison attended the Air Corps maneuvers which were highly successful and demonstrated that complete cooperation was necessary between ground and air troops. One of the most outstanding flights in the history of military aviation was made by eighteen planes of the First Pursuit Group in flying from Selfridge Field, Mt. Clemens, Mich., the northern border of the United States, to San Antonio, the southern border, in the elapsed time of 13 hr. at the rate of 126 m.p.h. The planes took off and landed together, carrying their full military load, and experienced no trouble whatsoever.

This demonstration as well as the fact that 109 airplanes started for San Antonio and 108 arrived from Air Corps stations all over the United States, flying a distance of 286,-300 mi. with but one minor accident which prevented only one of the airplanes from arriving at San Antonio, demonstrates the efficiency of the Air Corps and its equipment.

At the conclusion of the maneuvers, an air review was held in which over 200 Army Air Corps airplanes were in the air at the same time.

Mr. Davison found people on the West Coast air-minded and thoroughly alive to the possibilities of commercial aviation. At the present time there are several commercial air lines successfully operated between the principal cities in the west, that is, Salt Lake City, San Francisco and Los Angeles. San Francisco, Oakland, Los Angeles and San Diego have been very active in establishing municipal airports which would prove inviting to aircraft manufacturers and air transport organizations.

The Army five-year construction program calls for the establishment of a bombardment wing on the West Coast, consisting of twenty-seven bombardment planes, forty-eight pursuit planes, an observation squadron and a photographic detachment. In addition, at March Field, Riverside, Calif., which is now a supply depot, the Army Air Corps will locate a pursuit group.

It was noted that people everywhere throughout the country were keenly interested in the five-year program of the Army Air Corps.

The return flight from San Francisco was made over the air mail route—Salt Lake City; Cheyenne, Wyo., North Platte, St. Joseph, Mo., where Mr. Davison attended the first Air Congress; thence to Dayton and New York. The flight was made without untoward incident, stops being made on schedule and was thoroughly convincing that air transport is entirely practical.

Captain Horatio Barber's Exceptional Books on Aviation

Captain Barber as early as 1912 had designed and flown some 26 types of aircraft. He became famous as the designer of the first all-British aeroplane and, a member of the Royal Air Force, he was eminent during the war as officer in charge of Instruction at the Central Flying Field. He is now a leading aeronautical consultant residing in this country.

The Aeroplane Speaks

This work, adopted by the United States Government for use in the instruction of its aviators, is a simple, non-mathematical yet accurate treatise on flying. It is of importance to all interested in the science or art of flying, no matter whether their viewpoint may be that of the pilot, the mechanic or the aeronautical engineer. Professor Alexander Klemin, of the Daniel Guggenheim School of Aeronautics at New York University, says in his foreword: "It is almost a work of genius in its clarity and vividness. Everything is simple and accurate."

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This work on aerobatics, as the author terms stunt flying, is a dual purpose book, valuable alike to student and instructor. The information given is confined to essentials and the treatment reflects the keenness of mind and absolute familiarity of the author with his subject. Major W. G. Kilner, at present an active executive officer of the Air Corps at Washington says in his introduction to the book: "I have had occasion many times to refer to this text in order to straighten out for myself some point in aerial aerobatics."

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Detail West Point Graduates

The War Department construes the provisions of the Air Corps Act, approved July 2, 1926, as precluding commissioning in the Air Corps, in time of peace, any person other than a qualified flier. Consequently none of the graduates of the United States Military Academy, Class of 1927, has been commissioned in the Air Corps, all having been assigned to the remaining six combatant branches. All those prospective graduates who expressed a desire to undergo the prescribed physical examination for flying were given the examination at the Military Academy, and of those who qualified, thirty-eight have expressed a desire for detail in the Air Corps and will be so detailed at the time assignments to organizations and stations are announced. Their names, and branches in which commissioned are as follows:

Name	*Branch in which Commissioned*
Hawkins, Donald C.	Corps of Eng.
Naylor, Robert H.	Corps of Eng.
McGregor, George W.	Field Art.
Harrington, Charles A.	Corps of Eng.
Minter, William H.	Corps of Eng.
Day, Frederick E.	Coast Art. Corps
Daly, Maurice F.	Field Art.
Kunesh, Fred W.	Signal Corps
Pierce, George F.	Coast Art. Corps
Edwards, Parmer W.	Coast Art. Corps
Wilson, James	Signal Corps
Mechling, Edward P.	Cavalry
Flock, Julius T.	Signal Corps
Granholm, Frederick A.	Field Art.
Simonton, Samuel J.	Field Art.
Curtis, James D.	Coast Art. Corps
Lewis, Mark K., Jr.	Field Art.
Grover, Orrin L.	Coast Art. Corps
Cobb, Arthur L.	Cavalry
Schwab, John A.	Field Art.
Towner, Milton M.	Field Art.
White, Robert C.	Field Art.
Ganahl, Joseph., Jr.	Field Art.
Upthegrove, Fay R.	Infantry
Deichelmann, Matthew K.	Coast Art. Corps
Schmidt, Ernest G.	Infantry
Phelan, William J.	Infantry
Hackman, David M.	Infantry
Rose, Bernard C.	Infantry
Kirby, John W.	Infantry
Loughborough, David S.	Infantry
Huggins, Marion	Infantry
Funston, Frederick, Jr.	Infantry
Smyly, James W., Jr.	Infantry
Harding, Neil B.	Infantry
Easton, Robert L.	Infantry
Thorpe, Fred L.	Infantry
Bleakney, William R. F.	Infantry

Army Industrial College Graduates

Among the graduates of the sixth class of the Army Industrial College held in the Munitions Building, Washington, D. C., June 24, were the following:

Major Archie W. Barry, Air Corps, Wensoga, Miss.
Lieut. James B. Carroll, Air Corps, Bradford, Ill.
Major Henry W. Harms, Air Corps, Artesian, S. D.
Lieut. John Y. York, Jr., Air Corps, Tenova, W. Va.

The purpose of the Army Industrial College is to train Army officers in useful knowledge pertaining to the supervision of procurement of all military supplies in time of war and to assure adequate provision for the mobilization of material and industrial organization essential to wartime needs.

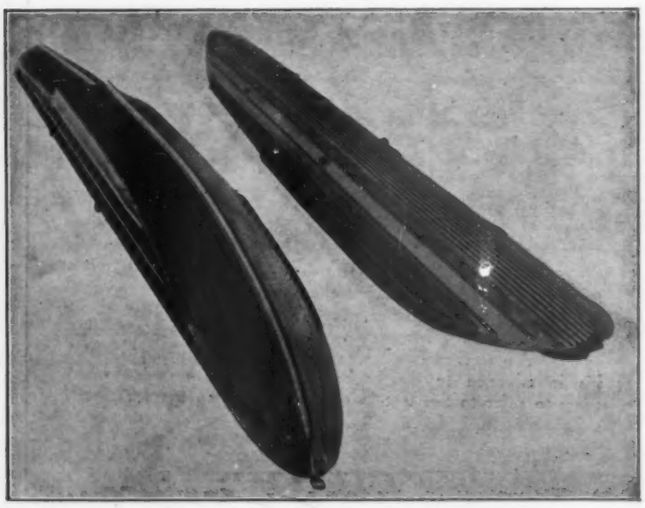
Fourth Corps Area Enrollment

The War Department has been advised that the enrollment in the Fourth Corps Area C. M. T. Camps which opened June 15 has exceeded the quota for the first time. The following is the enrollment reported on the second day of these camps:

Fort Bragg, N. C.	1094
Fort Oglethorpe, Ga.	734
Fort McPherson, Ga.	427
Fort Screven, Ga.	201
Camp McClellan, Ala.	793
Fort Barrancas, Fla.	940
Fort Moultrie, S. C.	780
	4969

Examinations For Second Lieutenants

Competitive examinations were held beginning Monday, June 20, 1927, at all large Army Posts, Corps Area and Department Headquarters in the United States, the Philippine Islands, Hawaii, Canal Zone and the American Forces in China, to fill existing vacancies in the grade of second lieutenant, Regular Army, in the following branches of the



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The examinations were both mental and physical. Existing vacancies number approximately eighty in the Air Corps and forty in the other branches. Those in the Air Corps must be filled by qualified pilots.

Aircraft Squadrons Establish Record

Travelling 320,000 mi. without a single serious accident—a distance which approximates thirteen trips around the world—is the record established by the Aircraft Squadrons, Scouting Fleet, when they flew into Hampton Roads at the completion of the annual Winter maneuvers.

There was not a single major casualty to material and not one serious infraction of naval discipline or good conduct.

All this was made possible by the effective cooperation between the ships and flying units, and the commanding officers of the units and the officers and men under them, and demonstrates the high value of morale.

Major Scott Visits Lakehurst

Major George H. Scott, of the British Royal Air Force, visited the Naval Air Station, Lakehurst, N. J., on June 8 and June 9, to discuss the standardization of mooring masts for rigid airships, in order that American airships can use British masts, and English airships the American masts.

Major Scott was the commanding officer of the British rigid airship, the R-34, on her round-trip trans-Atlantic flight to the United States and return in 1919. On the flight to the United States the R-34 covered a distance of 3600 mi. in 108 hr.; and on her return flight to England a distance of 3450 mi. in 75 hr.; carrying a crew of approximately thirty men.

Army Air Orders

Sec. Lieut. Rowland Kieburtz, Air Corps, Kelly Field, to Scott Field.

Capt. Robert Edmonston Ellis, Air Corps Res., Paterson, N. J., to active duty Anacostia, D.C., reverting to inactive status June 30, 1928.

First Lieut. Silas C. Hyndshaw, Air Corps, Letterman Hospital, San Francisco, will proceed to his home and await retirement.

First Lieut. David A. Morris, Corps of Eng., is detailed in the Air Corps, upon completion of tour of foreign service, and will proceed to Brooks Field.

Sec. Lieut. Herbert Everette Rice, Air Corps, Res., Granville, N. Y., to active duty Marshall Field, reverting to inactive status June 30, 1928.

First Lieut. Bennett E. Meyers, Air Corps, upon completion of tour of foreign service, to Air Corps procurement district, Dayton.

First Lieut. Lewis R. P. Reese, Air Corps, relieved from observation and treatment Walter Reed Hosp., Washington, and will rejoin his station, McCook Field.

Sec. Lieut. Ray B. Floyd, Air Corps (Inf.) is relieved from detail in the Air Corps, Fort Sam Houston, and is assigned to 38th Inf., Fort Sill.

First Lieut. George T. Barnes, Air Corps (Quartermaster Corps) is relieved from detail in the Air Corps, Fort Sam Houston, and will report to the commanding officer Normoyle quartermaster intermediate depot for duty with the 3rd Motor Rep. Bat.

Sec. Lieuts. Fred A. Ingalls, Air Corps and Howard H. Cough, Air Corps, are relieved from assignment and duty at Scott Field, and will report to com. Air Corps Bal. & Airship Sch., that station.

First Lieut. Lloyd Barnett, Air Corps, Crissy Field, to Atlanta for temp. duty. Upon completion of this duty, Lieutenant Barnett will proceed to Birmingham, Ala., take station and pass to the det. off. list.

Capt. Asa N. Duncan, Air Corps, is relieved from detail as instructor, Alabama National Guard, and will proceed to Langley Field.

Sec. Lieut. Joseph Hampton Atkinson, Air Corps Res., Dallas, to active duty Marshall Field, reverting to inactive status June 30, 1928.

Capt. Leslie Granger Mulzer, Air Corps Res., Columbus, to active duty Anacostia, D. C., reverting to inactive status June 30, 1928.

First Lieut. Donald G. Stitt, Air Corps, Fort Sill, to March Field.

Sec. Lieuts. Robert Richardson Ellis, Air Corps Res., Warren, Ohio; John Richard Krick, Air Corps Res., Danville, Ohio; and Louis Everette Wetherhold, Air Corps Res., Princeton, Ill., to active duty Brooks Field, reverting to inactive status June 30, 1928.

The following second Lieutenants, Air Corps Res., to active duty Brooks Field, from places indicated, reverting to inactive status June 30, 1928; John Philip Burkhart, San Francisco; Lawrence John Chiappino, San Jose, Cal.; Duane Monroe Covington, Seattle; George Martin Dixon, Berkeley, Calif.; Louis Howard Enos, San Francisco; Wilbur Mead Hayes, Berkeley; John Reede Jacques, Berkeley; Archibald Marison Mull, Jr., Sacramento; Raymond Charles Olsen, Oakland; Gardner Lawton von der Lieth, San Francisco.

First Lieut. Ray A. Dunn, Air Corps, promoted to rank of captain.

Sec. Lieut. Paul B. Nelson, Air Corps, Kelly Field, to Fort Sam Houston.

Sec. Lieut. Julian Stanley Dexter, Air Corps Res., Boston, to active duty Anacostia, reverting to inactive status June 30, 1928.

First Lieut. John A. Laird, jr., Air Corps, Cambridge, Mass., to Dayton.

First Lieut. Edwin Sullivan, Air Corps, Fort Crockett, to Kelly Field.

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Ill. & S. Wisc.—Sievert Aircraft Corp., 5934 S. Cicero, Chicago, Ill.
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W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12th St., K. C., Mo.
Okla. & Tex. Pan.—Southwest Airplane Sales Corp., Britton, Okla.
N. M. & Cen. Texas.—Browning Airplane Sales, Wichita Falls, Tex.
Southern Texas—Marion P. Hair, P.O. Box 420, San Antonio, Tex.
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Wyo., Mont. and W. Neb.—Wyoming Airways, Casper, Wyoming
S. Dak. & N. Dak.—Rapid City Air Lines, Inc., Rapid City, S. D.
W. Kan. and E. Neb.—C. E. Steele, Dodge City, Kansas
La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
W. Va. and E. Ohio—Lyle E. Scott, 328 2nd St., Marietta, Ohio
Utah, Nevada, S. Idaho—Rocky Mountain Airways, Salt Lake City
Mississippi—Tri-States Airways, Bry Block, Memphis, Tenn.
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Sec. Lieut. William Sanford Doxey, Air Corps Res., Jackson, Miss., to active duty Maxwell Field, reverting to inactive status June 30, 1928.

First Lieuts. Charles Glendower Ellicott, Air Corps Res., Santa Monica and Dean Farran, Air Corps Res., Los Angeles, to active duty Crissy Field, reverting to inactive status June 30, 1928.

First Lieut. Mark R. Woodward, Air Corps. M. I. T., Cambridge, to Aberdeen, Md.

Sec. Lieut. Robert W. Douglass, Jr., promoted to rank of First Lieut.

Capt. Howell R. Hanson, Air Corps (Field Art.) is relieved from detail in the Air Corps, Fort Sam Houston, and is assigned to the 17th Field Art., Fort Bragg, N. C.

Sec. Lieut. Louie Percy Turner, Air Corps Res., Birmingham, to active duty Maxwell Field, reverting to inactive status June 30, 1928.

First Lieut. Edward Meeker Haight, Air Corps Res., Flushing, to active duty Mitchel Field, reverting to inactive status June 30, 1928.

Sec. Lieut. Vernard Allerton Grant, Air Corps Res., Los Angeles, to active duty Crissy Field, reverting to inactive status June 30, 1928.

First Lieut. Ernest Alfred Eli Pratt, Air Corps Res., San Antonio, to active duty Fort Sam Houston, reverting to inactive status June 30, 1928.

Staff Serg. Cecil F. Renno, Air Corps, Fort Crockett, is transferred to the 68th Serv. Squad., Air Corps, Kelly Field.

Major Fred H. Coleman, Air Corps, Fort Leavenworth, to Washington.

Navy Air Orders

Lieut. Malcolm F. Sheffel det. Bu. Aero., to Aircf. Squad., Sctg. Flt.

Lieut. Scott E. Peck to duty Nav. Air Sta., Lakehurst.

Lieut. W. D. Thomas det. com. VO, Squad, 3 (USS Raleigh), Sctg. Flt., to Bu. Aero.

Lieut. (jg) Alfred C. Olney, Jr., det VO Squad. 3 (USS Detroit,) Aircf. Squad., Sctg. Flt., to temp. duty Navy Rifle Team, Wakefield, Mass.

Lieut. Bates H. Johnson det. VS Squad. 1, Sctg. Flt., to Asst. Inspt. Nav. Aircf., Buffalo, N. Y.

Lieut. Carleton C. Champion, Bu. Aero., to Naval Acad.

Lieut. Joseph J. Clark to continue duty VO Squad. 2 (USS Mississippi,) Aircf. Squad, Battle Flt. Orders to Lexington-Saratoga detail revoked.

Lieut. Comdr. Ralph G. Pennoyer det. Bu. Aero. to Off. Judge Advocate Gen.

Lieut. Barnett T. Talbott det. USS Memphis to Nav. Air Sta., Anacostia.

Lieut. Comdr. Bruce G. Leighton det. duty Aide to Asst. Sec. Navy for Aero., to duty Bu. Aero.

Lieut. Comdr. Wm. K. Harrill det. Bu. Aero., to duty as aide to Asst. Sec. of Navy for Aero.

Ch. Mach. Shine S. Hilliburton det. Nav. Air Sta., Pensacola, to Aircf. Squad., Battle Flt.

Lieut. Comdr. Homer H. H. Harrison det. Naval Aircf. Fact., Navy Yard, Philadelphia, to Nav. Air Sta., Lakehurst.

Blackburn to be Ass't. Gen. M'g'r. for N. A. T.

Charles T. Blackburn has recently been appointed Assistant General Manager of the National Air Transport, Inc. The announcement was made in Chicago by Colonel Paul Henderson, general manager of the company, which operated the Chicago-Fort Worth-Dallas air mail service and also hold contracts with the Post Office Department and the American Railway Express Company to carry air mail and air express between New York, Cleveland, Chicago and Dallas. Operations under the express contract and under the New York-Cleveland-Chicago air mail contract will start within the next sixty or ninety days.

Mr. Blackburn is a former Lieutenant Commander in the U. S. Navy. He graduated from the U. S. Naval Academy in 1907 and passed in succession through the various grades from Ensign to Lieutenant Commander. During the War he held the temporary rank of Commander, having command of the U. S. Destroyer Beale in European waters, and later of a destroyer division in home waters. His last detail in the naval service was as Aid to the Commandant, 4th Naval District, Philadelphia, Pa., and executive officer of the U. S. S. Antares, flagship of the Train, U. S. Scouting Fleet. He resigned from the Navy in January, 1927. Mr. Blackburn will have his headquarters in Chicago.

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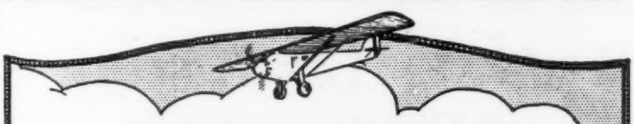

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PUBLISHER'S NEWS LETTER

The decision to promote Brig. Gen. Fechet to the position of Chief of the Air Corps with the rank of Major General settles one of the uncertainties regarding the future policy of the corps. For the first time since the separation of the aerial activities of the Army from the Signal Corps, an officer has been selected to command, who has previously been associated with the service. Heretofore, it has been possible for the General Staff to use this very attractive post to take care of some officer in another branch who deserved promotion. With the enactment of new laws by Congress relating to the organization and direction of the Air Corps, this practice was prohibited and only officers who have had experience in the branch are eligible. Much credit should go to General Patrick for sponsoring this change. Before the law was passed, it was generally known that the General Staff was grooming a brilliant officer for the post but his testimony before the various Congressional committees disclosed a point of view that was so reactionary that he was automatically eliminated from further consideration.

* * * *

All guesses as to the officer to be selected centered on the advancement of one of the three Assistants to the Chief of the Air Corps. Brig. Gen. Fechet had the advantage of seniority in his present rank although his real rank was that of third in the list of Lieutenant Colonels. His experience in the Army as well as in the Air Corps had mainly been in the field. His command of Kelly Field gave him an intimate knowledge of the problems away from Washington. As head of the Training and Operations Branch, while on duty in Washington, he further added to his experience and his selection for advancement was anticipated in well informed quarters. Brig. Gen. Gillmore was also considered to have an excellent chance owing to the growing importance of the materiel problems. As head of the Supply Division and more recently in command of the Experimental Station at McCook Field, he had acquired a wealth of experience that he could have used to great advantage as Chief of the Air Corps. Brig. Gen. Lahm's claims rested on an entirely different basis. He is not only one of the pioneers in aviation, holding Military Aviator's License No. 3, but has won fame as a balloonist, having captured the Gordon Bennett Cup in 1906. Furthermore, he had served overseas with the A. E. F., which service has always played an important part in selections for important posts in the War Department since the Armistice.

Immediately after the announcement was made of the selection of Brig. Gen. Fechet, he made a statement that will go far toward making the future prospects brighter for other officers in the Air Corps who hope that some day they may reach the top. He said that after his four year term had expired he would not accept reappointment. As General Fechet will reach his fiftieth birthday in August of this year, he could have, if he were successful and ambitious, looked forward to two reappointments before he reached the age of retirement. By voluntarily agreeing to relinquish the position of Chief at the age of fifty-four, and give other officers an opportunity to secure promotion, he has rendered a service that is typical of his broad point of view and consideration for his officer friends in the Corps. This new branch of the Army is essentially a young man's service and should be directed by men in the prime of life. They should fly and be able to command from the air if necessary. By making this decision Brig. Gen. Fechet has cleared the air for the future and assured himself of a loyal and wholehearted support from every officer in his command.

* * * *

Before the office of Assistant Secretary for War for Aeronautics was created, the Chief of the Air Service had to operate through the General Staff. All requests and suggestions had to be passed on by this all powerful group before it was presented to the Secretary of War for final approval. If a Lieutenant Colonel of the aviation branch of the Army, having been promoted to the rank of Major General, and drawing his fifty per cent flying pay, had to deal through the General Staff, exclusively, the situation would be very difficult. Increased rank and pay for military aviators has always been a sore spot in the Army. With F. Trubee Davison as Assistant Secretary of War this disadvantage is avoided, for the Chief of the Air Corps now has an advocate that does not have to consult with the General Staff but is in direct contact with the Secretary of War. In fact, the relationship that will exist between the new Chief of the Air Corps and Assistant Secretary Davison may approximate that of the Chief of Staff of the Army and the Secretary of War. The aircraft fraternity is fortunate in having as capable an influential man in the War Department as Mr. Davison. With Gen. Fechet as Chief there should come a decided improvement in the morale and efficiency of the Army Air Corps.

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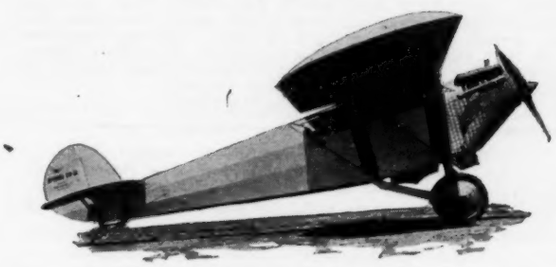

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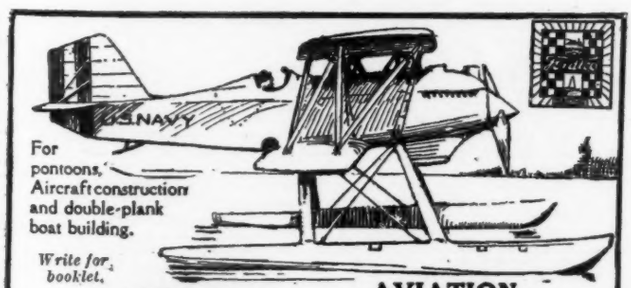

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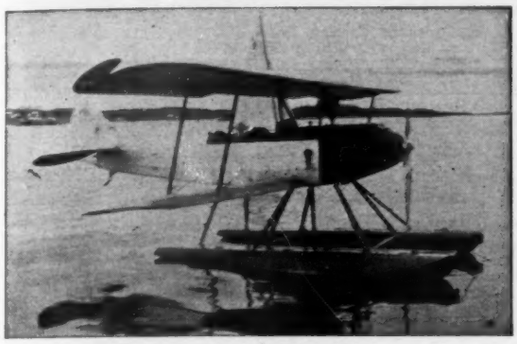

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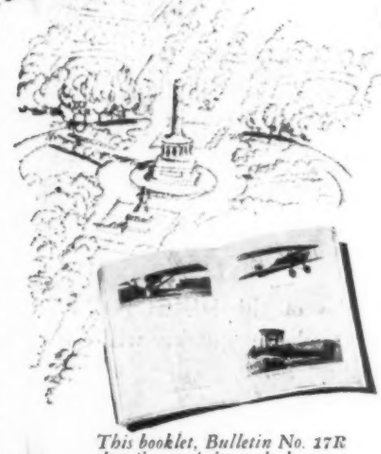

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